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THE NIMBUS 6 DATA CATALOG

VOLUME 6

1 MAY 1976 THROUGH 30 JUNE 1976

DATA ORBITS 4339 THROUGH 5155

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GODDARD SPACE FLIGHT CENTER

GREENBELT, MARYLAND

THE NIMBUS 6 DATA CATALOG

Volume 6

1 May 1976 through 30 June 1976
Data Orbits 4339 through 5155

Prepared by

Management and Technical Services Company
Beltsville, Maryland

For the

Landsat/Nimbus Project

May 1977

GODDARD SPACE FLIGHT CENTER
Greenbelt, Maryland

FOREWORD

This is the sixth volume of a series of catalogs to be published by the National Aeronautics and Space Administration to document data acquired from the Nimbus 6 meteorological satellite. This volume covers the period from 1 May 1976 through 30 June 1976. Subsequent catalogs will contain documentation for succeeding periods throughout the useful lifetime of Nimbus 6.

Background information concerning the Nimbus 6 meteorological satellite system and a description of the experiments and data formats has been published separately in The Nimbus 6 User's Guide. Post-launch User's Guide information changes and corrections are included in the data catalogs. The Nimbus 6 catalogs present the type of data available, anomalies in the data, if any, and geographic location and time of the data.

The assembly and editing of this catalog was accomplished by the Management and Technical Services Company (MATSCO), Beltsville, Maryland, under contract number NAS5-23740 with the Goddard Space Flight Center, NASA, Greenbelt, Maryland.

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Landsat/Nimbus Project
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SECTION 1

SUMMARY OF OPERATIONS

1.1 Introduction

Nimbus 6 was successfully launched from the Western Test Range, Vandenberg Air Force Base, California at 08 hr. 12 min. 00 sec. GMT on 12 June 1975. The orbit was nearly circular at 1093 x 1105 km. Satellite operations from launch through 14 July (orbit 425) consisted of engineering evaluation of all spacecraft systems. As a result of that effort, data reception, accountability and processing were intermittent during that period. Therefore, Volume 1 in this catalog series mainly reflects documentation from orbit 426 (14 July) through orbit 1082 (31 August). During orbit 4905 (12 June), Nimbus 6 successfully completed one year of operations. Table 1-1 is a summary of the documentation for each Nimbus 6 Data Catalog volume.

Because the spacecraft power is limited, all experiments are not on at the same time. During this catalog period the THIR, TWERLE and PMR data were recorded for almost all orbits. The ERB and ESMR experiments normally split their operating time; the ERB was on for two day periods while ESMR was off, followed by the ESMR being on for two days while ERB was off. This schedule was modified beginning with orbit 4751 (31 May). The ERB is scheduled to operate full time as power permits; while the ESMR is scheduled to operate during the Hurricane season. The SCAMS was on full time through orbit 4751 (31 May); after the above mentioned orbit, the SCAMS instrument ceased to function due to a scan mechanism anomaly. Beginning 10 May, the HIRS schedule was in operational support of the NOAA Severe Environmental Storm and Mesoscale Experiment. The HIRS support of project SESAME was terminated during orbit 4697 (27 May) when the Filter Chopper motor failed and the subsystem was turned off as a precautionary measure. The T&DRE was operational on at least seven different occasions during this catalog period when ATS-6 operations were conducted. Due to the depletion of methane in the cryogenic cooler; the last useable data from the LRIR experiment was received during orbit 2801 (7 January). The on-off cycle for each experiment is shown in Table 2-2 in Section 2 of this catalog.

Table 1-1

Nimbus 6 Catalog Documentation Summary

Volume	Dates	Orbits
1	12 June 75-31 Aug. 75	1-1082
2	1 Sept. 75-31 Oct. 75	1083-1900
3	1 Nov. 75-31 Dec. 75	1901-2717
4	1 Jan. 76-29 Feb. 76	2718-3521
5	1 Mar. 76-30 Apr. 76	3522-4338
6	1 May 76-30 Jun. 76	4339-5155

Because of an anomaly in the functioning of the High Data Range Storage subsystem (HDRSS) B, first noted during orbit 33 (14 June), HDRSS B has been limited to 65 minutes of record capability (out of a possible 120 minutes). With only HDRSS A available for full-time use, there are occasional periods when global experiment coverage is not obtained. (These occur when the Orroral, Australia STDN station is not available for playback of recorded experiment data.) The areas not covered are usually over the western part of the Pacific Ocean and/or the eastern part of the Atlantic Ocean. During orbit 4641 the HDRSS A recorder failed to record. Prior to the above date, HDRSS A was successfully used operationally 120 minutes every other orbit with HDRSS B providing 65 minutes of alternate coverage. Complete failure of HDRSS A occurred during orbit 4713 and despite many attempts to engage the system in a record mode, it has not recorded since orbit 4713 (28 May). The areas most affected by the lack of HDRSS A experiment coverage are the latitudes north of the Equator during the nighttime orbital passes. The daytime coverage remains virtually unchanged with the exception as noted in the above paragraph.

The pitch of the Nimbus 6 satellite has been made to alternate between +2.0 degrees, +0.6 degrees, and 0.0 degrees since launch. Table 1-2 lists the orbits when each pitch position was used.

A positive pitch angle of 0.6 degrees moves the nadir-looking position 11.5 kilometers ahead of the subsatellite point. A positive pitch angle of 2.0 degrees moves the nadir-looking position 38.3 kilometers ahead of the subsatellite point.

At these pitch angles, a scanner-type instrument no longer scans the earth along a great circle arc through the subpoint, but scans along the small circle formed by the intersection of the scan plane with the earth. Since the plane of the small circle is tilted with respect to the nominal scan plane, points on the arc are displaced farther from the great circle as the scan angle increases. As noted above, a pitch angle of 0.6 degrees causes a displacement of 11.5 kilometers at nadir, but when the scanner turns 45 degrees away from nadir the displacement increases slightly to 12.8 kilometers. Similarly, for a 2.0 degree pitch the displacement is 38.3 kilometers at nadir and increases to 42.6 kilometers at a 45 degree scan angle. Thus, although the instrument records in lines normal to the orbit plane (in the absence of yaw) the perpendicular displacement from the perfect-attitude scan line is not uniform across the scan line.

Subsections 1.2 through 1.10 of this catalog summarize the operational highlights of the individual experiments, present preliminary experiment results, and call attention to known data anomalies. Section 2 lists the on-off times for each experiment and provides a method for determining the geographical coverage of each experiment. Section 3 shows selected HIRS, SCAMS and ESMR images, and Section 4 presents THIR montages. Section 5 presents corrections to The Nimbus 6 User's Guide.

The user is referred to The Nimbus 6 User's Guide for a complete description of each experiment and to Section 1.7 of that Guide for the requesting procedure and sources for all data. Sections 2, 3, and 4 of this Data Catalog should help users select data to meet their needs.

Table 1-2

Pitch Positions for Nimbus 6
01 May through 01 July 1976 (Orbits 4343-5163)

Pitch Change			Pitch Bias	
Date (1976)	Orbit and STDN	Time (GMT)	+0.6°	+0.0°
1 May	4343A*	0839		X
1 May	4350A	2056	X	
2 May	4356A	0758		X
2 May	4364A	2205	X	
3 May	4370A	0902		X
3 May	4376A	1933	X	
4 May	4383A	0821		X
4 May	4390A	2036	X	
5 May	4396A	0738		X
5 May	4403A	1956	X	
6 May	4410A	0846		X
6 May	4417A	2102	X	
7 May	4431A	2205		X
7 May	4431A	2205	X	
8 May	4438A	1055		X
8 May	4444A	2125	X	
9 May	4451A	1013		X
9 May	4457A	2040	X	
10 May	4464A	0923		X
10 May	4470A	2000	X	
11 May	4477A	0849		X
11 May	4483A	1917	X	
12 May	4491A	0955		X
12 May	4498A	2211	X	
13 May	4505A	1100		X
13 May	4510A	1942	X	
14 May	4517A	0830		X
14 May	4523A	1858	X	
15 May	4533A	1304		X
16 May	4541W*	0325	X	
16 May	4547A	1410		X
17 May	4553W	0056	X	
17 May	4559A	1143		X
17 May	4563A	1843	X	
18 May	4568A	0402		X
18 May	4575A	1618	X	

Table 1-2 (continued)

Pitch Change			Pitch Bias	
Date (1976)	Orbit and STDN	Time (GMT)	+0.6°	+0.0°
19 May	4584A	0834		X
19 May	4589A	1720	X	
20 May	4597A	0751		X
20 May	4604A	2013	X	
21 May	4613A	1230		X
22 May	4632A	2220	X	
23 May	4638A	0922		X
23 May	4643A	1801	X	
24 May	4649E*	0508		X
24 May	4657A	1907	X	
25 May	4668A	1459		X
25 May	4672A	2159	X	
26 May	4679A	1049		X
26 May	4685A	2117	X	
27 May	4695A	1523		X
27 May	4699A	2224	X	
28 May	4709A	1625		X
29 May	4714O*	0233	X	
30 May	4727W	0148		X
30 May	4734A	1321	X	
31 May	4745A	0906		X
31 May	4751A	1940	X	
1 June	4767O	0137		X
2 June	4775A	1447	X	
3 June	4788A	1403		X
3 June	4793A	2253	X	
4 June	4802A	1508		X
5 June	4807O	0108	X	
5 June	4817A	1757		X
6 June	4821O	0212	X	
6 June	4829A	1530		X
6 June	4833A	2234	X	
7 June	4842A	1452		X
7 June	4846A	2152	X	
8 June	4854A	1225		X
8 June	4858A	1923	X	
9 June	4866A	0959		X
9 June	4871A	1842	X	
10 June	4881A	1245		X

Table 1-2 (continued)

Pitch Change			Pitch Bias	
Date (1976)	Orbit and STDN	Time (GMT)	+0.6°	+0.0°
10 June	4885A	1944	X	
10 June	4887A	2319		X
11 June	4890R*	0458	X	
11 June	4904R	0610		X
12 June	4911A	1822	X	
13 June	4922A	1414		X
13 June	4926A	2113	X	
14 June	4934A	1146		X
14 June	4939A	2030	X	
15 June	4948A	1250		X
15 June	4952A	1949	X	
17 June	4969O	0327		X
17 June	4979A	2010	X	
18 June	4993A	2121		X
19 June	5000A	1000	X	
20 June	5011R	0558		X
20 June	5018A	1807	X	
21 June	5030A	1545		X
21 June	5034A	2247	X	
22 June	5042A	1317		X
22 June	5047A	2202	X	
23 June	5056A	1420		X
23 June	5061A	2307	X	
24 June	5069A	1341		X
24 June	5074A	2228	X	
25 June	5082A	1259		X
25 June	5087A	2147	X	
26 June	5095A	1218		X
26 June	5100A	2104	X	
27 June	5108A	1137		X
27 June	5115A	2352	X	
28 June	5123A	1426		X
28 June	5128A	2310	X	
29 June	5131R	0457		X
29 June	5137A	1532	X	
30 June	5149A	1304		X
30 June	5154A	2149	X	
1 July	5163A	1406		X

*A = Fairbanks, Alaska, O = Orroral, Australia, E = Goddard Space Flight Center, Maryland, R = Rosman, North Carolina, W = Winkfield, England

1.2 The Temperature Humidity Infrared Radiometer (THIR) Subsystem

The quality of the THIR data from both channels (11.5 μm and 6.7 μm) and telemetry have been good since launch. Daily world montages of the THIR are presented in Section 4 of this catalog. All processed THIR film is archived and available through the National Space Science Data Center, as is all available THIR digital data. The THIR digital products are processed to final format only on request. Users should refer to Section 4 of this catalog, and to Sections 1.7 and 2.4 of The Nimbus 6 User's Guide for a discussion of the formats and procedure to order these products.

1.3 The High Resolution Infrared Radiation Sounder (HIRS) Experiment

During this reporting period, the HIRS instrumentation system was scheduled (12 May-11 June) to operate in support of the NOAA SESAME project. Preparations for this project included the outgassing (orbits 4389-4913) of the subsystem to remove optics contamination with the intent of improving data quality. Programming and scanning coverage of the target area was conducted twice daily with good results. This schedule began with orbit 4461 and terminated with orbit 4697 (May 27) when a subsystem anomaly (Filter Chopper motor failed) occurred, causing the operation to be terminated. Since the Filter Chopper motor is an integral part of the scanning mechanism; the failure of this component precludes the active participation of the HIRS subsystem in the NOAA data gathering experiment.

Instrumentation problems as discussed in Volume 4, coupled with the current anomaly have resulted in the need to turn off the subsystem as a precautionary move. Subsequent operations after orbit 4697 (17 May) are to be construed as evaluations of the subsystem problem since valid data is not available after orbit 4697.

1.4 The Scanning Microwave Spectrometer (SCAMS) Experiment

The instrument ceased functioning during orbit 4751 (31 May) due to jamming of the scan mechanism. Scan problems as discussed in Volume 5 first developed during orbit 3862 (26 March), when the drive belt for channel 2 (31.65 z) antenna started slipping. The loss of data from channel 2 prevented retrieval of atmospheric water vapor and liquid water during this catalog period; the inversion matrices for atmospheric temperature were redefined to exclude channel 2, and temperature retrievals were continued until 31 May.*

1.5 The Electrically Scanning Microwave Radiometer (ESMR) Experiment

The ESMR performance continued to be satisfactory during this catalog period; operating on a two on and then a two day off cycle until 10 June when a new schedule was implemented. The new full time operating mode of the ESMR will coincide with

*SCAMS Experimenter Contribution

the hurricane season at which time the operating mode will be reassessed in late August. The Gunn oscillator and hot reference temperature continued to run at higher-than-expected temperature with no adverse results on the data. Selected ESMR images for this catalog period appear in Section 3.

1.6 The Earth Radiation Budget (ERB) Experiment

The Solar and wide-angle Earth-Flux channels continued to operate in the non-scanning mode in a 2 day on/off cycle until 11 June. After this period, the ERB experiment was on full time as power permitted. Special tests were performed on the Solar Channels during orbit 5069-5074, 5082-5087, and 5095 through 5100. The test was to aid in the interpretation of the solar observations. Data provided from both the total Earth-Flux and Solar Channels was satisfactory. The scanning channels operate only in the nadir position because of mechanical scan problems.

1.7 The Limb Radiance Inversion Radiometer (LRIR) Experiment

The last useable data from the LRIR was received during orbit 2801 (7 January). By this orbit the methane used to cool the detector was depleted and the telemetry indicating the detector temperature was saturated at 73.6°K. The ammonia temperature was constant until orbit 2787 (6 January) when it began to increase and then became erratic-varying from 145.6°K to 150.0°K. At orbit 2802 (7 January) the temperature of 145.6°K began increasing and by orbit 2806 it was at 165.7°K, when the LRIR was turned off. Since the above date, the experiment has been turned on during several occasions to record the ammonia temperature. The latest reading, orbit 5014 (20 June) indicated that the cryogen shield temperature reached telemetry saturation at 263°K. With all of the coolants (methane-ammonia) depleted and useable experiment data non-existent; the LRIR is expected to be in a permanent non-operational mode even though the instrument and telemetry are completely functional.

1.8 The Pressure Modulator Radiometer (PMR) Experiment

The PMR performance this period was satisfactory. The instrument was on continuously. Data quality was good. All acquired data was routinely transmitted from GSFC to the experimenter at Oxford, England.

Since orbit 1727 (19 October) channel 1 has only operated in the nadir-looking mode. This is necessary because in the scan mode this channel appears to operate between ±10° from nadir rather than the normal ±15° from nadir. The operating mode has remained normal except for a test of the pressure modulators to test for gas leaks. This test began during orbit 3722 (16 March) and continued for approximately 24 hours. The test was successful and no pressure degradation was noted. The instrument was returned to normal operating conditions at the end of the test period.

1.9 The Tropical Wind Energy Conversion and Reference Level Experiment (TWERLE)

The TWERLE continued to operate very well during this catalog period. Determination, location accuracy of system reference platforms was temporarily effected during the orbital period 4600 through 4780. This effect was due to the negative drag factor caused by the outgassing of the LRIR cryogen (NH_3). During this time-frame, proper corrections and the constant updating of the emphemeris time slip held location errors to well within system specifications of 1.5 kilometers of their true position.

As of 12 June 1976, (Nimbus 6 one year anniversary) over 700 platforms had been activated. Table 1-3 shows distribution of these platforms. The full address of each experimenter is given in Table 9-2 in the Nimbus 6 User's Guide. (Corrected addresses for many of these experimenters, and addresses for several new experimenters, are given in Section 5.8 of this catalog.) Anyone interested in results from a particular experiment should write to the principal investigator for that experiment.

1.10 The Tracking and Data Relay Experiment (T&DRE)

The T&DRE performance was satisfactory during this catalog period. The orbits when the T&DRE was operated are listed in Table 2-2 in Section 2. Significant accomplishments of T&DRE are discussed in Data Catalog Volume 1, Section 1.10.

Table 1-3

TWERLE Platform Activity as of 12 June 1976

Principal Investigator	Platform			
	Type	Active	Inactive	Total
Dr. Paul R. Julian Boulder, Colorado	Balloons	81	275	356
Professor Norbert Untersteiner Seattle, Washington	Ice Buoys	26	6	32
Dr. Hanson Miami, Florida	Drifting Buoys	12	33	45
Mr. Vincent Lally Boulder, Colorado	Balloons	0	21	21
Dr. P. Richardson Woods Hole, Massachusetts	Drifting Buoys	0	1	1
Arnold Gordon Palisades, New York	Drifting Buoys	4	20	24
Tim P. Barnett La Jolla, California	Drifting Buoys	3	13	16

Table 1-3 (continued)

Principal Investigator	Platform			
	Type	Active	Inactive	Total
Mr. Robert Kee Washington, D.C.	Drifting Buoys	0	2	2
Mr. R. E. Vockeroth Ontario, Canada	Buoys	2	0	2
Mr. Jack Lentfer Anchorage, Alaska	Polar Bears	1	1	2
Mr. B. M. Buck Santa Barbara, California	Drifting Buoys	3	2	5
Mr. Fernando DeMendonca Sao Paulo, Brazil	Buoys	0	2	2
Mr. George Cresswell Cronulla, Australia	Drifting Buoys	9	5	14
Dr. A. Dyer Mordialloc, Australia	Drifting Buoys	0	3	3
Professor Lacombe Paris, France	Drifting Buoys	1	4	5
Mr. C. K. Jenson/J. Nordo Oslo, Norway	Buoys	2	0	2
Mr. T. Haegh/T.Vinje Oslo, Norway	Ice Buoys	5	5	10
Mr. Frank Anderson Congella, South Africa	Drifting Buoys	5	5	10
Professor H. Stommel Cambridge, Massachusetts	Drifting Buoys	0	6	6
Dr. A. D. Kirwan, Jr. College Station, Texas	Drifting Buoys	0	12	12
Mr. H. N. Brann Melbourne, Australia	Drifting Buoys	1	5	6
Professor Morel Paris, France	Balloons & Buoys	0	47	47
Dr. John Garrett Victoria, B.C. Canada	Drifting Buoys	2	33	35

Table 1-3 (continued)

Principal Investigator	Platform			
	Type	Active	Inactive	Total
Professor Tchernia Paris, France	Drifting Buoys	3	2	5
Mr. R. R. Dickson Lowestoft, Suffolk, U. K.	Drifting Buoys	1	5	6
Dr. Michael Hall Bay St. Louis, Mississippi	Buoys	9	10	19
Mr. David Thomas, Jr. Hampton, Virginia	Buoys	0	6	6
Dr. J. Williamson La Jolla, California	Balloons	0	1	1
Mr. J. C. O'Rourke Calgary, Canada	Buoys	2	0	2
Mr. Robert Oehlkers Madison, Wisconsin	Buoys	2	8	10
Capt. E. A. Delaney Washington, D.C.	Buoys	1	0	1
Dr. R. H. Goodman Alberta, Canada	Buoys	1	1	2
Dr. D. Halpern Seattle, Washington	Buoys	2	1	3
TOTALS		178	535	713

SECTION 2

THE ORBITAL ELEMENTS AND DATA AVAILABILITY ON-OFF TIMES

This section presents the Nimbus orbital elements for selected epochs, tabulates the time when each of the experiments was recording data, and gives procedures for determining the time and orbit when the satellite is over a given geographical area (and thus determining the location of coverage for each experiment).

The Nimbus 6 Brouwer Mean orbital elements for selected epochs during May and June 1976 are listed in Table 2-1.

As the elements indicate, the orbital period is slowly increasing (approximately 22 milliseconds per day) and the satellite is moving into a slightly higher orbit. This effect has been attributed to the thrust given by the solid methane and ammonia sublimating from the LRIR solid cooler. Since 26 May, the orbital period appears to have stablized and has remained constant at 107.4183 minutes. Thus with the depletion of the solid methane and ammonia now complete; the predicted (Vol. 4, Sec. 2) stabilization of the orbital period by mid-1976 has been confirmed. The elements listed in Table 2-1 do not account for this affect. When these elements are used more than seven days from epoch, location errors of greater than 60 km (about ten seconds of time), can be expected. If more accurate ephemeris are needed for a specific time period, write to the Nimbus Project, Code 430, Goddard Space Flight Center, Greenbelt, Maryland 20771.

The data availability on-off times, listed in Table 2-2, are the times when the data from each experiment was recorded on a HDRSS and processed through the Meteorological Data Handling System (MDHS) at Goddard Space Flight Center. The Table 2-2 header labels and their meaning are as follows:

- INT ORBIT AND STDN

  The satellite orbit number in progress when the satellite data is relayed to a ground station is called the interrogation orbit (INT ORBIT). The ground stations receiving the Nimbus 6 satellite data are part of the Spacecraft and Tracking Data Network (STDN). There are five STDN stations receiving Nimbus 6 experiment data: Fairbanks, Alaska (denoted by the letter "A"); Rosman, North Carolina (R); Orroral, Australia (O); Winkfield, England (W); and Goddard Space Flight Center, Maryland (E).

- HDRS

  The HDRS (High Data Rate Storage System - HDRSS) is the acronym for the satellite tape recorder system. Recorder "A" or "B" (or both) is played back during each STDN station interrogation.

Table 2-1

Nimbus 6 Brouwer Mean Orbital Elements for
May and June 1976

Epoch	GMT	5 May 76 00 00 00	21 May 76 00 00 00	7 June 76 00 00 00	21 June 76 00 00 00
Semi-Major Axis	Km	7485.038	7485.303	7485.375	7485.378
Eccentricity		.000822	.000855	.000872	.000851
Inclination	Degrees	99.957	99.958	99.955	99.954
Argument of Perigee	Degrees	171.936	134.814	97.692	66.070
Right Ascension of Ascending Node	Degrees	38.773	54.479	71.162	84.900
Height of Perigee	Km	1100.72	1100.74	1100.68	1100.84
Height of Apogee	Km	1113.02	1113.54	1113.74	1113.68
Anomalistic Period	Minutes	107.41093	107.41662	107.41819	107.41826
Motion of Perigee	Deg. per Day	-2.4198	-2.4195	-2.4196	-2.4197

- HDRSS TIME ON-OFF

  The HDRSS ON and OFF times are given in GMT to the nearest minute. The ON time is the time the (A or B) HDRSS begins recording experiment measurements; the OFF time is when it stops recording. Usually, the ON and OFF times occurs when the satellite is within acquisition range on one of the four STDN stations. The time span between each ON and OFF usually covers part of two DATA ORBITS.

- LRIR, THIR, TDRE, SCAM, ESMR, ERB, PMR, TWRL, HIRS

  These are the acronyms for each of the experiments on Nimbus 6. (Acronyms longer than four letters have been shortened.) The column beneath each acronym contains a series of "X's" or "blanks." Each "X" in the column indicates that the data for that experiment was processed at GSFC. A "blank" usually indicates that the experiment was turned off for the

HDRSS ON-OFF time in that line. A single "blank" in the middle of a series of "X's" frequently means that the experiment was on during that time span but the data has not been processed, or is unavailable for any of several reasons.

- DATA ORBIT

  A DATA ORBIT begins when the satellite crosses the equator heading in a northbound direction, and ends after the satellite has circled the earth and is about to cross the equator heading in a northbound direction. The DATA ORBIT number increases by one with each successive northbound equator crossing. The ASCENDING NODE and DESCENDING NODE information is referenced to the DATA ORBIT number.

- ASCENDING NODE TIME (and) LONG

  The ASCENDING NODE is the point in the orbit when the satellite crosses the equator heading in a northbound direction. The TIME of ASCENDING NODE is given in hours (HR), minutes (MN), and seconds (SS) GMT. The longitude (LONG) of ASCENDING NODE is given to the nearest tenth of a degree of east (E) or west (W) longitude. For Nimbus 6, the ascending node crossings always occur during the daytime portion of the orbit at approximately 11:45 a.m. local time.

- DESCENDING NODE TIME (and) LONG

  The DESCENDING NODE is the point within a DATA ORBIT when the satellite crosses the equator heading in a southbound direction. The TIME of DESCENDING NODE is given in hours (HR), minutes (MN), and seconds (SS) GMT. The longitude (LONG) of DESCENDING NODE is given to the nearest degree of east (E) or west (W) longitude. The descending node crossings always occur during the nighttime portion of each orbit at approximately 11:45 p.m. local time.

Table 2-2 together with the World Map (Figure 2-1) and the vellum Subsatellite Tracks Overlay attached to the back of this catalog, can be used to determine approximate geographic coverages and times for experiment data that the user may wish to order. The Overlay contains 14 correctly spaced satellite subpoint tracks, which end at the approximate earth day-to-night transitions. The tracks contain time ticks spaced 5 minutes apart, approximately annotated at the edge of the overlay and referenced to the equator.

A Subsatellite Tracks Overlay is correctly oriented with the World Map when the ascending or descending node line (equator) on the overlay coincides with the 0-degree latitude line (equator) of the World Map.

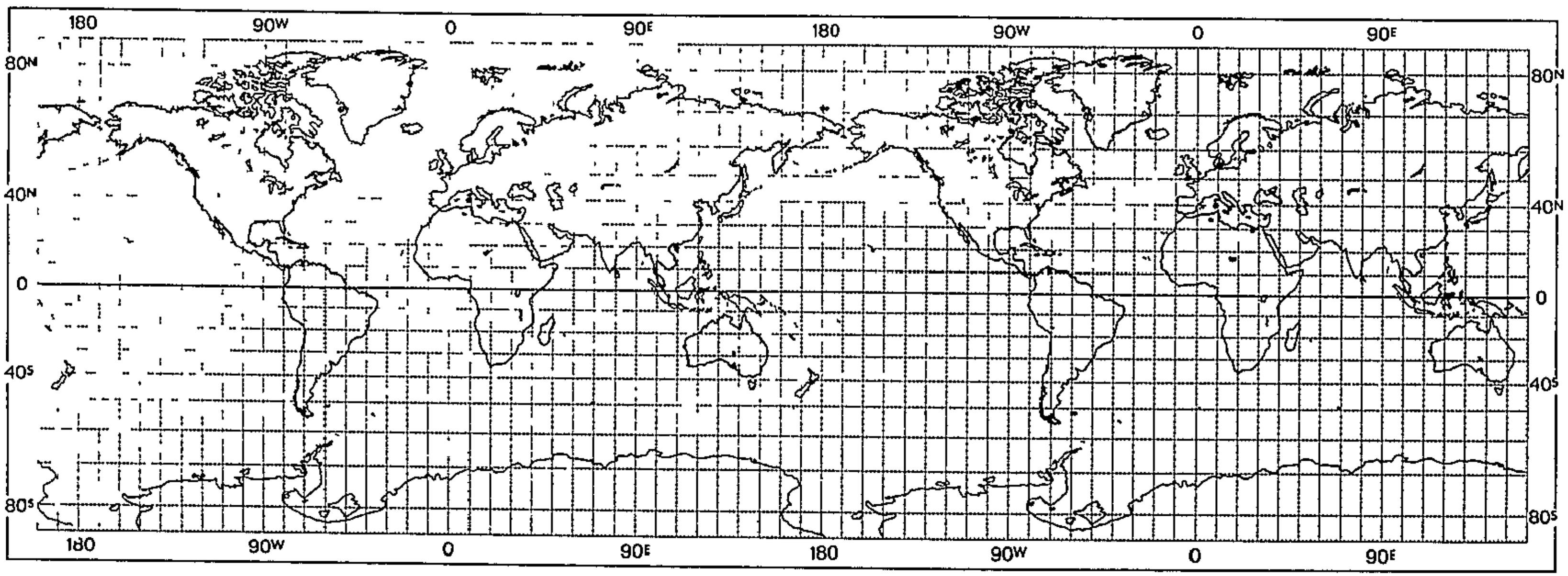

Figure 2-1. World Map

Orbital coverage for all orbits on any day is then determined by placing one of the orbit tracks on the overlay at its appropriate ascending node (for daytime data) or descending node (for nighttime data) longitude. (The nodes for each day are listed in Table 2-2.) The orbit track (or tracks) which covers the area of interest is readily

The time (GMT) of satellite passage over an area of interest is calculated by adding or subtracting the minutes from equator crossing (as determined from the overlay) to the appropriate node time (derived from Table 2-2). For daytime orbits, time is added to the ascending node for areas north of the equator, and subtracted from the ascending node for areas south of the equator. For nighttime orbits, time is subtracted from the descending node for areas north of the equator, and added to the descending node for areas south of the equator.

To determine if an experiment was ON during the calculated orbit and time of interest, the user must first "fit" the calculated time into the correct ON-OFF interval of an interrogation orbit listed in Table 2-2. Then the user must check the appropriate experiment column for that line. If an "X" is in the column, the experiment was on and the data has been processed. If the column is "blank", the experiment was off (or the data was not processed) and no data for that orbit is available.

An alternate method of determining geographic coverage and time of data is to use the method described in Section 4. The THIR montages and the vellum Location Guides (attached in the back of this catalog) are used to locate the geographical coverage of each orbit of THIR. The data coverage from other experiments will be within the limits of each THIR swath. The TIME of coverage over a particular area is obtained by using Table 4-1 and adding or subtracting this computed time to the appropriate ascending or descending node time given in Table 2-2.

Each request for data should contain, as a minimum, the name of the experiment for which data is requested, the calendar date of the data, the orbit, the time (GMT) interval of the data needed, and the geographic limits of the area of interest. The procedures described above will provide this information.

The nature and format of the data available from each experiment are explained in detail in the respective sections of The Nimbus 6 User's Guide. The appropriate sources for requesting the various data types are listed in Section 1.7 of the same manual.

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
01 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
43380	B	2314	0025			X	X		X	X	X		4339	005254	E162.6	014635	W030.9
43390	A	0024	0222				X		X	X	X		4340	024025	E135.7	033407	W057.7
4341E	A	0232	0414		X		X		X	X	X		4341	042756	E108.8	052138	W084.6
4342E	A	0510	0652		X		X		X	X	X		4342	061528	E081.9	070909	W111.5
4343A	A	0657	0835		X		X		X	X	X		4343	080259	E055.1	085640	W138.4
4344A	A	0839	1022		X		X		X	X	X		4344	095030	E028.2	104412	W165.3
4345A	A	1026	1207		X		X		X	X	X		4345	113801	E001.3	123143	E167.9
4346A	A	1211	1354		X		X		X	X	X		4346	132533	W025.6	141914	E141.0
4347A	A	1358	1539		X		X		X	X	X		4347	151304	W052.5	160646	E114.1
4348A	A	1543	1721		X		X		X	X	X		4348	170035	W079.4	175417	E087.2
4349A	A	1725	1906		X		X		X	X	X		4349	184807	W106.2	194148	E060.3
4350A	A	1910	2052		X		X		X	X	X		4350	203538	W133.1	212919	E033.5
4351A	A	2056	2241		X		X		X	X	X		4351	222309	W160.0	231651	E006.6
43530	B	2236	2340				X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
02 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
43520	A	2341	0139				X		X	X	X		4352	001040	E173.1	010422	W020.3
43530	A	0152	0330				X		X	X	X		4353	015812	E146.2	025153	W047.2
4354E	B	0332	0430		X		X		X	X	X		4354	034543	E119.4	043925	W074.1
4355E	A	0426	0611		X		X		X	X	X		4355	053314	E092.5	062656	W101.0
4356A	A	0615	0754		X		X		X	X	X		4356	072046	E065.6	081427	W127.8
4357A	A	0758	0941		X		X		X	X	X		4357	090817	E038.7	100158	W154.7
4358A	A	0945	1127		X		X		X	X	X		4358	105548	E011.8	114930	E178.4
4359A	A	1131	1311		X		X		X	X	X		4359	124320	W015.1	133701	E151.5
4360A	A	1316	1459		X		X	X	X	X	X		4360	143051	W041.9	152432	E124.7
4361A	A	1503	1640		X		X	X		X	X		4361	161822	W068.8	171204	E097.8
4362A	A	1645	1825		X		X	X		X	X		4362	180553	W095.7	185935	E070.9
4363A	A	1829	2009		X		X	X		X	X		4363	195325	W122.6	204706	E044.0
4364A	A	2013	2159		X		X	X		X	X		4364	214056	W149.5	223438	E017.1
4365A	A	2204	2346		X		X	X		X	X		4365	232827	W176.3	002209	W009.8

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
03 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	THDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4365O	B	2344	0049				X	X		X	X		4366	011559	E156.8	020940	W036.6
4366O	A	0049	0245				X	X		X	X		4367	030330	E129.9	035711	W063.5
4368E	A	0256	0438		X		X	X		X	X		4368	045101	E103.0	054443	W090.4
4368E	A	0437	0530		X		X	X		X	X		4369	063833	E076.2	073214	W117.3
4369A	A	0533	0714		X		X	X		X	X		4370	082604	E049.3	091945	W144.2
4370A	A	0719	0858		X		X	X		X	X		4371	101335	E022.4	110717	W171.0
4371A	A	0902	1045		X		X	X		X	X		4372	120107	W004.5	125448	E162.1
4372A	A	1049	1231		X		X	X		X	X		4373	134838	W031.4	144219	E135.2
4373A	A	1236	1417		X		X	X		X	X		4374	153609	W058.3	162951	E108.3
4374A	A	1421	1600		X		X	X		X	X		4375	172341	W085.1	181722	E081.4
4375A	A	1604	1743		X		X	X		X	X		4376	191112	W112.0	200453	E054.6
4376A	A	1747	1928		X		X	X		X	X		4377	205843	W138.9	215225	E027.7
4377A	A	1932	2115		X		X	X		X	X		4378	224615	W165.8	233956	E000.8
4378A	A	2119	2303		X		X	X		X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
04 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	THDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4379O	B	2300	0005				X	X		X	X						
4379O	A	0005	0204				X	X		X	X		4379	003342	E167.4	012723	W026.1
4380O	A	0213	0356				X	X		X	X		4380	022113	E140.5	031454	W052.9
4381E	B	0356	0450		X		X	X		X	X		4381	040844	E113.6	050226	W079.8
4382E	A	0449	0633		X		X	X		X	X		4382	055616	E086.7	064957	W106.7
4383A	A	0638	0817		X		X	X		X	X		4383	074347	E059.8	083728	W133.6
4384A	A	0821	1002		X		X	X		X	X		4384	093118	E033.0	102500	W160.5
4385A	A	1007	1149		X		X	X		X	X		4385	111850	E006.1	121231	E172.7
4386A	A	1153	1335		X		X	X		X	X		4386	130621	W020.8	140002	E145.8
4387A	A	1339	1521		X		X	X		X	X		4387	145352	W047.7	154734	E118.9
4388A	A	1525	1705		X		X		X	X	X		4388	164124	W074.6	173505	E092.0
4389A	A	1709	1846		X		X		X	X	X		4389	182855	W101.5	192236	E065.1
4390A	A	1850	2032		X		X		X	X	X		4390	201626	W128.3	211008	E038.3
4391A	A	2036	2220		X		X		X	X	X		4391	220358	W155.2	225739	E011.4
4392O	B	2217	2322				X		X	X	X		4392	235129	E177.9	004510	W015.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
05 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TRDE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
43920	A	2322	0120				X		X	X	X		4393	013900	E151.0	023242	W042.4
43930	A	0129	0308				X		X	X	X		4394	032632	E124.2	042013	W069.3
4394E	B	0312	0408		X		X		X	X	X		4395	051403	E097.3	060744	W096.2
4395E	A	0406	0552		X		X		X	X	X		4396	070134	E070.4	075516	W123.0
4396A	A	0556	0734		X		X		X	X	X		4397	084906	E043.5	094247	W149.9
4397A	A	0738	0922		X		X		X	X	X		4398	103637	E016.6	113018	W176.8
4398A	A	0926	1108		X		X		X	X	X		4399	122409	W010.3	131750	E156.3
4399A	A	1113	1254		X		X		X	X	X		4400	141140	W037.1	150521	E129.4
4400A	A	1258	1440		X		X		X	X	X		4401	155911	W064.0	165252	E102.6
4401A	A	1444	1623		X		X		X	X	X		4402	174643	W090.9	184024	E075.7
4402A	A	1627	1808		X		X		X	X	X		4403	193414	W117.8	202755	E048.8
4403A	A	1817	1952		X		X		X	X	X		4404	212145	W144.7	221526	E021.9
4404A	A	1956	2138		X		X		X	X	X		4405	230917	W171.6	000258	W005.0
4405A	A	2143	2328		X		X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
06 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TRDE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
44050	B	2325	0029				X		X	X	X		4406	005648	E161.6	015029	W031.9
44060	B	0029	0228				X		X	X	X		4407	024419	E134.7	033800	W058.7
4408E	A	0233	0418		X		X		X	X	X		4408	043151	E107.8	052532	W085.6
4408E	B	0417	0513		X		X		X	X	X		4409	061922	E080.9	071303	W112.5
4409E	A	0514	0656		X		X		X	X	X		4410	080654	E054.1	090035	W139.4
4410A	A	0700	0840		X		X		X	X	X		4411	095425	E027.2	104806	W166.3
4411A	A	0845	1025		X		X		X	X	X		4412	114156	E000.3	123537	E166.9
4412A	A	1030	1214		X		X		X	X	X		4413	132928	W026.6	142309	E140.0
4413A	A	1219	1358		X		X		X	X	X		4414	151659	W053.5	161040	E113.1
4414A	A	1402	1545		X		X		X	X	X		4415	170430	W080.4	175811	E086.2
4415A	A	1549	1726		X		X			X	X		4416	185202	W107.2	194543	E059.3
4416A	A	1730	1909		X		X			X	X		4417	203933	W134.1	213314	E032.5
4417A	A	1914	2057		X		X			X	X		4418	222705	W161.0	232046	E005.6
4418A	A	2101	2244		X		X			X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
07 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4421E	A	0129	0323		X		X	X		X	X		4419	001436	E172.1	010817	W021.3
4421E	B	0328	0432		X		X	X		X	X		4420	020207	E145.2	025548	W048.2
4422E	A	0434	0614		X		X	X		X	X		4421	034939	E118.4	044320	W075.1
4423A	A	0619	0757		X		X	X		X	X		4422	053710	E091.5	063051	W101.9
4424A	A	0801	0945		X		X	X		X	X		4423	072442	E064.6	081822	W128.8
4425A	A	0949	1130		X		X	X		X	X		4424	091213	E037.7	100554	W155.7
4426A	A	1134	1317		X		X	X		X	X		4425	105944	E010.8	115325	E177.4
4427A	A	1321	1502		X		X	X		X	X		4426	124716	W016.1	134057	E150.5
4428A	A	1506	1645		X		X	X		X	X		4427	143447	W042.9	152828	E123.7
4429A	A	1649	1831		X		X	X		X	X		4428	162219	W069.8	171559	E096.8
4430A	A	1836	2015		X		X	X		X	X		4429	180950	W096.7	190331	E069.9
4431A	A	2019	2200		X		X	X		X	X		4430	195721	W123.6	205102	E043.0
44320	B	2158	2306				X	X		X	X		4431	214453	W150.5	223834	E016.1
													4432	233224	W177.3	002605	W010.8

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
08 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
44320	A	2306	0105				X	X		X	X		4433	011956	E155.8	021336	W037.6
44330	A	0112	0253				X	X		X	X		4434	030727	E128.9	040108	W064.5
4434E	B	0252	0348		X		X	X		X	X		4435	045458	E102.0	054839	W091.4
4435E	B	0347	0532		X		X	X		X	X		4436	064230	E075.1	073611	W118.3
4436A	A	0538	0715		X		X	X		X	X		4437	083001	E048.3	092342	W145.2
4437A	A	0719	0901		X		X	X		X	X		4438	101733	E021.4	111114	W172.0
4438A	A	0905	1050		X		X	X		X	X		4439	120504	W005.5	125845	E161.1
4439A	A	1054	1236		X		X	X		X	X		4440	135236	W032.4	144616	E134.2
4440A	A	1240	1419		X		X	X		X	X		4441	154007	W059.3	163348	E107.3
4441A	A	1423	1604		X		X	X		X	X		4442	172838	W086.2	182119	E080.4
4442A	A	1609	1748		X		X		X	X	X		4443	191510	W113.4	200851	E053.6
4443A	A	1753	1932		X		X		X	X	X		4444	210241	W139.9	215622	E026.7
4444A	A	1936	2118		X		X		X	X	X		4445	225013	W166.8	234353	W000.2
4445A	A	2124	2309		X		X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
09 MAY 1976

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
44450	B	2246	0009			X	X		X	X	X	X	4446	003748	E166.3	013129	W027.1
44460	A	0009	0208				X		X	X	X		4447	022520	E139.4	031901	W054.0
4448E	A	0305	0400		X		X		X	X	X		4448	041251	E112.6	050632	W080.9
4448E	B	0400	0454		X		X		X	X	X		4449	060023	E085.7	065403	W107.8
4449E	A	0455	0635		X		X		X	X	X		4450	074754	E058.8	084135	W134.6
4450A	A	0639	0821		X		X		X	X	X		4451	093526	E031.9	102906	W161.5
4451A	A	0825	1009		X		X		X	X	X		4452	112257	E005.0	121638	E171.6
4452A	A	1013	1152		X		X		X	X	X		4453	131029	W021.9	140409	E144.7
4453A	A	1156	1342		X		X		X	X	X		4454	145800	W048.7	155141	E117.9
4454A	A	1347	1524		X		X		X	X	X		4455	164532	W075.6	173912	E091.0
4455A	A	1528	1706		X		X		X	X	X		4456	183303	W102.5	192644	E064.1
4456A	A	1710	1850		X		X		X	X	X		4457	202034	W129.4	211415	E037.2
4457A	A	1854	2036		X		X		X	X	X		4458	220806	W156.3	230147	E010.3
4458A	A	2041	2225		X		X		X	X	X		4459	235537	E176.9	004918	W016.6
44590	B	2221	2326				X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
10 MAY 1976

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
44590	A	2326	0125				X		X	X	X		4460	014309	E150.0	023649	W043.5
44600	A	0133	0316				X		X	X	X		4461	033040	E123.1	042421	W070.3
4461E	B	0316	0409		X		X		X	X	X		4462	051812	E096.2	061152	W097.2
4462E	A	0409	0556		X		X		X	X	X	X	4463	070543	E069.3	075924	W124.1
4463A	A	0601	0741		X		X		X	X	X	X	4464	085315	E042.5	094655	W151.0
4464A	A	0745	0925		X		X		X	X	X		4465	104046	E015.6	113427	W177.9
4465A	A	0929	1110		X		X		X	X	X		4466	122818	W011.3	132158	E155.3
4466A	A	1115	1300		X		X		X	X	X		4467	141549	W038.2	150930	E128.4
4467A	A	1305	1439		X		X		X	X	X		4468	160321	W065.1	165701	E101.5
4468A	A	1443	1624		X		X		X	X	X		4469	175052	W092.0	184433	E074.6
4469A	A	1628	1813		X		X		X	X	X	X	4470	193824	W118.8	203204	E047.7
4470A	A	1817	1956		X		X	X		X	X		4471	212555	W145.7	221936	E020.9
4471A	A	2000	2145		X		X	X		X	X		4472	231327	W172.6	000707	W006.0
4472A	A	2149	2330		X		X	X		X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
11 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
44720	B	2328	0033				X	X		X	X		4473	010058	E160.5	015439	W032.9
44730	A	0033	0230				X	X		X	X		4474	024830	E133.6	034210	W059.8
4475E	A	0239	0421		X		X	X		X	X		4475	043601	E106.8	052942	W086.7
4476E	B	0421	0518		X		X	X		X	X	X	4476	062333	E079.9	071713	W113.6
4476E	A	0521	0659		X		X	X		X	X	X	4477	081104	E053.0	090445	W140.4
4477A	A	0703	0845		X		X	X		X	X	X	4478	095836	E026.1	105216	W167.3
4478A	A	0849	1029		X		X	X		X	X		4479	114607	W000.8	123948	E165.8
4479A	A	1033	1220		X		X	X		X	X		4480	133339	W027.7	142719	E138.9
4480A	A	1225	1404		X		X	X		X	X		4481	152110	W054.5	161451	E112.0
4481A	A	1408	1545		X		X	X		X	X		4482	170842	W081.4	180222	E085.2
4482A	A	1549	1729		X		X	X		X	X		4483	185613	W108.3	194954	E058.3
4483A	A	1734	1912		X		X	X		X	X		4484	204345	W135.2	213725	E031.4
4484A	A	1917	2102		X		X	X		X	X		4485	223116	W162.1	232457	E004.5
4485A	A	2106	2249		X		X	X		X	X						
44860	B	2244	2349				X	X		X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
12 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
44860	A	2349	0148				X	X		X	X		4486	001848	E171.1	011228	W022.4
44870	A	0156	0338				X	X		X	X		4487	020619	E144.2	030000	W049.2
4488E	B	0337	0433		X		X	X		X	X		4488	035351	E117.3	044731	W076.1
4489E	A	0436	0620		X		X	X		X	X	X	4489	054122	E090.4	063503	W103.0
4495A	B	0610	0640		X		X	X		X		X	4490	072854	E063.5	082234	W129.9
4490A	A	0625	0803		X		X	X		X	X	X	4491	091625	E036.7	101006	W156.8
4491A	A	0807	0950		X		X	X		X	X		4492	110357	E009.8	115737	E176.4
4492A	A	0955	1134		X		X	X		X	X		4493	125129	W017.1	134509	E149.5
4493A	A	1138	1321		X		X	X		X	X		4494	143900	W044.0	153240	E122.6
4494A	A	1325	1504		X		X	X		X	X		4495	162632	W070.9	172012	E095.7
4495A	A	1508	1650		X		X		X	X	X	X	4496	181403	W097.8	190743	E068.8
4496A	A	1654	1836		X		X		X	X	X	X	4497	200135	W124.6	205515	E041.9
4497A	A	1840	2018		X		X		X	X	X		4498	214906	W151.5	224246	E015.1
4498A	A	2022	2206		X		X		X	X	X		4499	233638	W178.4	003018	W011.8
44990	A	2202	2306				X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
13 MAY 1976

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
44990	B	2307	0106				X		X	X	X		4500	012409	E154.7	021749	W038.7
45000	A	0115	0256				X		X	X	X		4501	031141	E127.8	040521	W065.7
4501E	B	0254	0349		X		X		X	X	X		4502	045912	E101.0	055253	W092.5
4502E	A	0350	0535		X		X		X	X	X	X	4503	064644	E074.1	074024	W119.4
4503A	A	0556	0722		X		X		X	X	X	X	4504	083415	E047.2	092756	W146.2
4504A	B	0526	0554		X		X		X	X	X	X	4505	102147	E020.3	111527	W173.1
4504A	A	0726	0905		X		X		X	X	X		4506	120919	W006.6	130259	E160.0
4505A	A	0909	1053		X		X		X	X	X		4507	135650	W033.5	145030	E133.1
4506A	A	1058	1239		X		X		X	X	X		4508	154422	W060.3	163802	E106.2
4507A	A	1244	1424		X		X		X	X	X		4509	173153	W087.2	182533	E079.4
4508A	A	1428	1609		X	X	X		X	X	X		4510	191925	W114.1	201305	E052.5
4509A	A	1613	1752		X	X	X		X	X	X		4511	210656	W141.0	220036	E025.6
4510A	A	1756	1936		X	X	X		X	X	X	X	4512	225428	W167.9	234809	W001.3
4511A	A	1941	2123		X	X	X		X	X	X						
4512A	A	2128	2312		X	X	X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
14 MAY 1976

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4515E	A	0150	0350		X		X		X	X	X	X	4513	004159	E165.3	013540	W028.2
4515E	B	0349	0454		X		X		X	X	X	X	4514	022931	E138.4	032311	W055.1
4516E	A	0501	0643		X		X		X	X	X	X	4515	041703	E111.5	051043	W081.9
4517A	A	0647	0825		X		X		X	X	X	X	4516	060434	E084.6	065814	W108.8
4518A	A	0830	1010		X		X		X	X	X		4517	075206	E057.7	084546	W135.7
4519A	A	1015	1158		X		X		X	X	X		4518	093937	E030.8	103317	W162.6
4520A	A	1202	1343		X		X		X	X	X		4519	112709	E004.0	122049	E170.5
4521A	A	1348	1528		X		X		X	X	X		4520	131440	W022.9	140821	E143.7
4522A	A	1532	1713		X		X		X	X	X	X	4521	150212	W049.8	155552	E116.8
4523A	A	1717	1853		X		X	X		X	X		4522	164944	W076.7	174324	E089.9
4524A	A	1857	2042		X		X	X		X	X		4523	183715	W103.6	193055	E063.0
4525A	A	2047	2228		X		X	X		X	X		4524	202447	W130.5	211827	E036.1
4526A	A	2225	2329		X		X	X		X	X		4525	221218	W157.3	230558	E009.3
													4526	235950	E175.8	005330	W017.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
15 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
45260	A	2325	0126				X	X		X	X		4527	014722	E148.9	024102	W044.5
45270	A	0136	0320				X	X		X	X		4528	033453	E122.0	042833	W071.4
4528E	B	0318	0417		X		X	X		X	X	X	4529	052225	E095.1	061605	W098.3
4529E	A	0413	0601		X		X	X		X	X	X	4530	070956	E068.3	080336	W125.2
4530A	A	0606	0744		X		X	X		X	X	X	4531	085729	E041.4	095108	W152.0
4531A	B	0546	0615		X		X	X		X	X	X	4532	104459	E014.5	113839	W178.9
4531A	A	0748	0929		X		X	X		X	X		4533	123231	W012.4	132611	E154.2
4532A	A	0933	1115		X		X	X		X	X		4534	142003	W039.3	151343	E127.3
4533A	A	1119	1300		X		X	X		X	X		4535	160734	W066.2	170114	E100.4
4534A	A	1304	1447		X		X	X		X	X		4536	175506	W093.0	184846	E073.6
4535A	A	1452	1631		X		X	X		X	X	X	4537	194237	W119.9	203617	E046.7
4536A	A	1636	1817		X		X	X		X	X	X	4538	213009	W146.8	222349	E019.8
4537A	A	1821	1958		X		X	X		X	X		4539	231741	W173.7	001121	W007.1
4538A	A	2002	2145		X		X	X		X	X						
4539A	A	2149	2335		X		X	X		X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
16 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
45390	B	2333	0037	X		X	X		X		X		4540	010510	E159.5	015849	W034.0
45400	A	0038	0236				X	X		X	X		4541	025241	E132.6	034621	W060.9
4542E	A	0243	0428		X		X	X		X	X		4542	044013	E105.7	053353	W087.7
4542E	B	0428	0522		X		X	X		X	X	X	4543	062744	E078.8	072124	W114.6
4543E	A	0523	0705		X		X	X		X	X	X	4544	081516	E051.9	090856	W141.5
4544A	A	0710	0848		X		X	X		X	X	X	4545	100248	E025.0	105627	W168.4
4545A	A	0852	1035		X		X	X		X	X		4546	115019	W001.8	124359	E164.7
4546A	A	1039	1220		X		X	X		X	X		4547	133751	W028.7	143131	E137.9
4547A	A	1224	1405		X		X	X		X	X		4548	152522	W055.6	161902	E111.0
4548A	A	1409	1550		X		X	X		X	X		4549	171254	W082.5	180634	E084.1
4549A	A	1554	1737		X		X	X	X	X	X	X	4550	190026	W109.4	195405	E057.2
4550A	A	1741	1930		X		X		X	X	X		4551	204757	W136.3	214137	E030.3
4551A	B	1932	2034		X		X		X	X	X		4552	223529	W163.1	232909	E003.5
4552A	A	2110	2252		X		X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
17 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4555E	A	0132	0320		X		X		X	X	X		4553	002301	E170.0	011640	W023.4
4555E	B	0330	0434		X		X		X	X	X		4554	021032	E143.1	030412	W050.3
4556E	A	0443	0624		X		X		X	X	X	X	4555	035804	E116.2	045143	W077.2
4557A	A	0628	0805		X		X		X	X	X	X	4556	054535	E089.3	063915	W104.1
4558A	B	0609	0638		X		X		X	X	X	X	4557	073307	E062.5	082647	W131.0
4558A	A	0809	0949		X		X		X	X	X		4558	092039	E035.6	101418	W157.8
4559A	A	0953	1138		X		X		X	X	X		4559	110810	E008.7	120150	E175.3
4560A	A	1142	1323		X		X		X	X	X		4560	125542	W018.2	134922	E148.4
4561A	A	1327	1508		X		X		X	X	X		4561	144314	W045.1	153653	E121.5
4562A	A	1513	1653		X		X		X	X	X		4562	163045	W072.0	172425	E094.6
4563A	A	1657	1838		X		X		X	X	X	X	4563	181817	W098.8	191156	E067.8
4565A	A	1842	2034		X		X		X	X	X		4564	200548	W125.7	205928	E040.9
4565A	B	2034	2138		X		X		X	X	X		4565	215320	W152.6	224700	E014.0
45660	B	2213	2310				X		X	X	X		4566	234052	W179.5	003431	W012.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
18 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
45660	A	2312	0110				X		X	X	X		4567	012823	E153.6	022203	W039.8
45670	A	0118	0303				X		X	X	X		4568	031555	E126.8	040935	W066.7
4568E	B	0303	0358		X		X		X	X	X		4569	050327	E099.9	055706	W093.6
4569E	A	0354	0525		X		X		X	X	X	X	4570	065058	E073.0	074438	W120.4
4570A	B	0546	0725		X		X		X	X	X	X	4571	083830	E046.1	093210	W147.3
4571A	A	0729	0910		X		X		X	X	X	X	4572	102602	E019.2	111941	W174.2
4572A	A	0914	1101	X	X		X		X	X	X		4573	121333	W007.7	130713	E158.9
4573A	A	1106	1243		X		X		X	X	X		4574	140105	W034.5	145444	E132.0
4574A	A	1249	1431		X		X		X	X	X		4575	154837	W061.4	164216	E105.2
4575A	A	1436	1614		X	X	X	X		X	X	X	4576	173608	W088.3	182948	E078.3
4576A	A	1618	1756		X	X	X	X		X	X	X	4577	192340	W115.2	201719	E051.4
4578A	A	1800	2000		X	X	X	X		X	X		4578	211112	W142.1	220451	E024.5
4578A	B	2000	2104		X	X	X	X		X	X		4579	225843	W169.0	235223	W002.4
4579A	A	2133	2317		X	X	X	X		X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
19 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
45790	B	2313	0017			X	X	X		X	X		4580	004615	E164.2	013954	W029.3
45800	A	0017	0215				X	X		X	X		4581	023347	E137.3	032726	W056.1
4582E	A	0226	0429		X		X	X		X	X	X	4582	042118	E110.4	051458	W083.0
4582E	B	0408	0502		X		X	X		X	X	X	4583	060850	E083.5	070229	W109.9
4583E	A	0506	0646		X		X	X		X	X	X	4584	075622	E056.6	085001	W136.8
4584A	B	0632	0702		X		X	X		X	X	X	4585	094353	E029.8	103733	W163.7
4584A	A	0650	0828		X		X	X		X	X		4586	113125	E002.9	122504	E169.5
4585A	A	0832	1020		X		X	X		X	X		4587	131857	W024.0	141236	E142.6
4586A	A	1024	1203		X		X	X		X	X		4588	150628	W050.9	160008	E115.7
4587A	A	1207	1350		X		X	X		X	X		4589	165400	W077.8	174739	E088.8
4588A	A	1354	1535		X		X	X		X	X		4590	184132	W104.7	193511	E061.9
4589A	A	1539	1714		X		X	X		X	X	X	4591	202903	W131.5	212243	E035.0
4591A	A	1714	1917		X		X	X	X	X	X		4592	221635	W158.4	231014	E008.2
4591A	A	1933	2016		X		X	X		X	X						
4592A	A	2052	2233		X		X	X		X	X						
45930	B	2230	2334				X	X		X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
20 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
45930	A	2334	0133				X	X		X	X		4593	000407	E174.7	005746	W018.7
45940	A	0141	0325				X	X		X	X		4594	015138	E147.8	024518	W045.6
4595E	B	0322	0414		X		X	X		X	X		4595	033910	E120.9	043249	W072.5
4596E	A	0417	0606		X		X	X		X	X	X	4596	052642	E094.1	062021	W099.4
4597A	A	0611	0746		X		X	X		X	X	X	4597	071413	E067.2	080753	W126.3
4598A	B	0550	0620		X		X	X		X	X	X	4598	090145	E040.3	095524	W153.1
4598A	A	0751	0934		X		X	X		X	X		4599	104917	E013.4	114256	W180.0
4599A	A	0938	1121		X		X	X		X	X		4600	123648	W013.5	133028	E153.1
4600A	A	1126	1307		X		X	X		X	X		4601	142420	W040.4	151800	E126.2
4601A	A	1311	1454		X		X	X	X	X	X		4602	161152	W067.3	170531	E099.3
4602A	A	1458	1636		X		X		X	X	X		4603	175924	W094.1	185303	E072.5
4603A	A	1640	1820		X		X		X	X	X	X	4604	194655	W121.0	204035	E045.6
4604A	A	1820	2009		X		X		X	X	X		4605	213427	W147.9	222806	E018.7
4605A	A	2014	2153		X		X		X	X	X		4606	232159	W174.8	001538	W008.2
4606A	A	2157	2340		X		X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
21 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
4609E	A	0221	0417		X		X		X	X	X		4607	010930	E158.4	020310	W035.1
4609E	B	0420	0524		X		X		X	X	X		4608	025702	E131.5	035041	W062.0
4610E	A	0527	0708		X		X		X	X	X	X	4609	044434	E104.6	053813	W088.8
4611A	A	0656	0854		X		X		X	X	X	X	4610	063205	E077.7	072545	W115.7
4612A	A	0855	1037		X		X		X	X	X		4611	081937	E050.8	091317	W142.6
4613A	A	1041	1224		X		X		X	X	X		4612	100709	E023.9	110048	W169.5
4614A	A	1228	1410		X		X		X	X	X		4613	115441	W003.0	124820	E163.6
4615A	A	1414	1557		X		X		X	X	X	X	4614	134212	W029.8	143552	E136.8
4616A	A	1601	1739		X		X		X	X	X	X	4615	152944	W056.7	162323	E109.9
4618A	A	1743	1939		X		X		X	X	X		4616	171716	W083.6	181055	E083.0
4618A	B	1940	2044		X		X		X	X	X		4617	190448	W110.5	195827	E056.1
46200	B	2252	2354				X		X	X	X		4618	205219	W137.4	214559	E029.2
													4619	223950	W164.3	233330	E002.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
22 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
46200	A	0016	0148				X		X	X	X		4620	002723	E168.9	012102	W024.5
46210	A	0204	0347				X		X	X	X		4621	021454	E142.0	030834	W051.4
4622E	B	0350	0438		X		X		X	X	X		4622	040226	E115.1	045605	W078.3
4623E	A	0440	0622		X		X		X	X	X	X	4623	054958	E088.2	064337	W105.2
4624A	A	0631	0810		X		X		X	X	X	X	4624	073730	E061.3	083109	W132.1
4625A	B	0614	0644		X		X		X	X	X	X	4625	092501	E034.5	101841	W159.0
4625A	A	0814	0956		X		X		X	X	X		4626	111233	E007.6	120612	E174.2
4626A	A	1000	1143		X		X		X	X	X		4627	130005	W019.3	135344	E147.3
4627A	A	1147	1328		X		X		X	X	X		4628	144737	W046.2	154116	E120.4
4628A	A	1332	1515		X		X	X	X	X	X		4629	163508	W073.1	172848	E093.5
4629A	A	1520	1657		X		X	X		X	X		4630	182240	W100.0	191619	E066.6
4630A	A	1701	1842		X		X	X		X	X	X	4631	201012	W126.8	210351	E039.8
4631A	A	1847	2029		X		X	X		X	X		4632	215744	W153.7	225123	E012.9
4632A	A	2033	2216		X		X	X		X	X		4633	234515	E179.4	003855	W014.0
46330	B	2212	2316				X	X		X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
23 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4633O	A	2316	0114				X	X		X	X		4634	013247	E152.5	022626	W040.9
4634O	A	0127	0306				X	X		X	X		4635	032019	E125.6	041358	W067.8
4635E	B	0306	0358		X		X	X		X	X		4636	050751	E098.8	060130	W094.7
4636E	A	0404	0544		X		X	X		X	X	X	4637	065522	E071.9	074901	W121.6
4637A	A	0548	0728		X		X	X		X	X	X	4638	084254	E045.0	093633	W148.4
4638A	B	0445	0550		X		X	X		X	X	X	4639	103026	E018.1	112405	W175.3
4638A	A	0732	0915		X		X	X		X	X		4640	121758	W008.8	131137	E157.8
4639A	A	0919	1101		X		X	X		X	X	X	4641	140529	W035.7	145908	E130.9
4640A	A	1106	1247		X		X	X		X	X	X	4642	155301	W062.6	164640	E104.0
4641A	A	1251	1432		X		X	X		X	X	X	4643	174033	W089.4	183412	E077.2
4645A	B	2000	2106		X		X	X		X	X		4644	192805	W116.3	202143	E050.3
4646A	A	2212	2317		X		X	X		X	X		4645	211536	W143.2	220916	E023.4
													4646	230308	W170.1	235647	W003.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
24 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4646O	B	2324	0027				X	X		X	X		4647	005040	E163.0	014419	W030.4
4647O	B	0042	0146				X	X		X	X		4648	023812	E136.2	033151	W057.3
4649E	B	0354	0458		X		X	X		X	X		4649	042544	E109.3	051923	W084.1
4650E	B	0542	0646		X		X	X		X	X	X	4650	061315	E082.4	070654	W111.0
4651A	B	0652	0754		X		X	X		X	X	X	4651	080047	E055.5	085426	W137.9
4652A	B	0910	1014		X		X	X		X	X		4652	094819	E028.6	104158	W164.8
4653A	B	1057	1202		X		X	X		X	X		4653	113551	E001.7	122930	E168.3
4654A	B	1242	1346		X		X	X		X	X		4654	132322	W025.1	141701	E141.5
4655A	B	1428	1532		X		X	X		X	X		4655	151054	W052.0	160433	E114.6
4656A	B	1610	1714		X		X	X		X	X	X	4656	165826	W078.9	175205	E087.7
4657A	B	1756	1900		X		X		X	X	X		4657	184558	W105.8	193937	E060.8
4658A	B	1944	2101		X		X		X	X	X		4658	203330	W132.7	212709	E033.9
4659A	B	2129	2238		X		X		X	X	X		4659	222101	W159.6	231440	E007.0

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
25 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
46600	B	2337	0042				X		X	X	X		4660	000833	E173.6	010212	W019.9
46610	A	0152	0257				X		X	X	X		4661	015605	E146.7	024944	W046.7
4662E	A	0152	0332		X		X		X	X	X		4662	034337	E119.8	043716	W073.6
4662E	B	0336	0418		X		X		X	X	X		4663	053109	E092.9	062448	W100.5
4663E	A	0428	0606		X		X		X	X	X	X	4664	071840	E066.0	081219	W127.4
4664A	B	0553	0658		X		X		X	X	X	X	4665	090612	E039.2	095951	W154.3
4665A	A	0750	0939		X		X		X	X	X		4666	105344	E012.3	114723	W178.9
4666A	B	1016	1120		X		X		X	X	X		4667	124116	W014.6	133455	E152.0
4667A	A	1122	1312		X		X		X	X	X		4668	142848	W041.5	152227	E125.1
4668A	B	1346	1450		X		X		X	X	X		4669	161619	W068.4	170958	E098.2
4669A	A	1453	1641		X		X		X	X	X	X	4670	180351	W095.3	185730	E071.3
4670A	B	1716	1821		X		X		X	X	X	X	4671	195123	W122.2	204502	E044.4
4671A	A	1822	2009		X		X		X	X	X		4672	213855	W149.0	223234	E017.6
4672A	B	2048	2152		X		X		X	X	X		4673	232627	W175.9	002006	W009.3
4673A	A	2154	2345		X		X		X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
26 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
46730	B	2352	0056				X		X	X	X		4674	011358	E157.2	020737	W036.2
46740	A	0059	0240				X		X	X	X		4675	030130	E130.3	035509	W063.1
4676E	B	0404	0508		X		X		X	X	X		4676	044902	E103.4	054241	W090.0
4677E	A	0518	0708		X		X		X	X	X		4677	063634	E076.6	073013	W116.9
4678A	B	0705	0810		X		X		X	X	X		4678	082406	E049.7	091745	W143.7
4679A	A	0840	1038		X		X		X	X	X		4679	101138	E022.8	110517	W170.6
4680A	B	1120	1225		X		X		X	X	X		4680	115909	W004.1	125248	E162.5
4681A	A	1221	1410		X		X		X	X	X		4681	134641	W031.0	144020	E135.6
4682A	B	1449	1554		X		X		X	X	X	X	4682	153413	W057.9	162752	E108.7
4683A	A	1553	1738		X		X	X	X	X	X	X	4683	172145	W084.7	181524	E081.9
4684A	B	1818	1922		X		X	X		X	X		4684	190917	W111.6	200256	E055.0
4686A	B	2154	2258		X		X	X		X	X		4685	205649	W138.5	215027	E028.1
													4686	224420	W165.4	233759	E001.2

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
27 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
46870	B	0056	0201				X	X		X	X		4687	003152	E167.7	012531	W025.7
4690E	B	0353	0457		X		X	X		X	X	X	4688	021924	E140.9	031303	W052.6
4691A	B	0627	0750		X		X	X		X	X	X	4689	040656	E114.0	050035	W079.5
4692A	A	0850	0959		X		X	X		X	X		4690	055428	E087.1	064807	W106.3
4693A	B	1038	1157		X		X	X		X	X		4691	074200	E060.2	083538	W133.2
4694A	A	1224	1342		X		X	X		X	X		4692	092931	W033.3	102310	W160.1
4695A	B	1409	1526		X		X	X		X	X	X	4693	111703	W006.4	121042	E173.0
4696A	A	1552	1711		X		X	X		X	X	X	4694	130435	W020.5	135814	E146.1
4697A	B	1737	1841		X		X	X		X	X	X	4695	145207	W047.3	154546	E119.3
4698A	B	1924	2041		X		X	X		X	X		4696	163939	W074.2	173318	E092.4
4699A	B	2110	2228		X		X	X		X	X		4697	182711	W101.1	192050	E065.5
													4698	201443	W128.0	210821	E038.6
													4699	220214	W154.9	225553	E011.7
													4700	234946	E178.2	004325	W015.2

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
28 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4702E	B	0254	0414		X		X	X		X	X		4701	013718	E151.4	023057	W042.1
4703E	B	0440	0554		X		X	X		X	X		4702	032450	E124.5	041829	W068.9
4704A	B	0554	0652		X		X	X		X	X		4703	051222	E097.6	060601	W095.8
4705A	B	0737	0838		X		X	X		X	X		4704	065954	E070.7	075333	W122.7
4706A	B	0957	1102		X		X	X		X	X		4705	084726	E043.8	094104	W149.6
4707A	B	1144	1302		X		X	X		X	X		4706	103458	E017.0	112836	W176.5
4708A	B	1328	1432		X		X	X		X	X		4707	122229	W009.9	131608	E156.7
4709A	B	1512	1625		X		X	X	X	X	X		4708	141001	W036.8	150340	E129.8
4710A	B	1702	1806		X		X		X	X	X		4709	155733	W063.7	165112	E102.9
4711A	B	1841	2001	X	X		X		X	X	X		4710	174505	W090.6	183844	E076.0
4712A	B	1952	2126	X	X		X		X	X	X		4711	193237	W117.5	202616	E049.1
4713A	B	2217	2322		X		X		X	X	X		4712	212009	W144.4	221348	E022.2
													4713	230741	W171.2	000119	W004.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
29 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	THIS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
47130	B	2319	0027				X		X	X	X		4714	005513	E161.9	014851	W031.5
4716E	B	0417	0514		X		X		X	X	X	X	4715	024244	E135.0	033623	W058.4
4718A	B	0729	0846	X	X		X		X	X	X		4716	043016	E108.1	052355	W085.3
4719A	A	0916	1034	X	X		X		X	X	X		4717	061748	E081.2	071127	W112.2
4720A	B	1101	1221	X	X		X		X	X	X		4718	080520	E054.4	085859	W139.1
4721A	A	1248	1405	X	X		X		X	X	X		4719	095252	E027.5	104631	W165.9
4722A	B	1432	1548		X		X		X	X	X	X	4720	114024	E000.6	123403	E167.2
4723A	B	1616	1734		X		X		X	X	X	X	4721	132756	W026.3	142135	E140.3
4724A	B	1801	1920	X	X		X		X	X	X		4722	151528	W053.2	160906	E113.4
4725A	B	1948	2105	X	X		X		X	X	X		4723	170300	W080.1	175638	E086.5
4726A	B	2134	2252	X	X		X		X	X	X		4724	185031	W106.9	194410	E059.6
													4725	203803	W133.8	213142	E032.8
													4726	222535	W160.7	231914	E005.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
30 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	THIS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
47270	B	2352	0056				X		X	X	X		4727	001307	E172.4	010646	W021.0
47280	B	0156	0301				X		X	X	X		4728	020039	E145.3	025418	W047.9
4729E	B	0335	0422		X		X		X	X	X		4729	034811	E118.6	044150	W074.8
4731A	B	0520	0625	X	X		X		X	X	X	X	4730	053543	E091.8	062922	W101.7
4732A	B	0833	0950	X	X		X		X	X	X		4731	072315	E064.9	081654	W128.6
4733A	B	1020	1139		X		X		X	X	X		4732	091047	E038.0	100425	W155.4
4734A	B	1206	1324		X		X		X	X	X		4733	105819	E011.1	115157	E177.7
4735A	B	1350	1508		X		X	X	X	X	X		4734	124551	W015.8	133929	E150.8
4736A	B	1534	1652		X		X	X		X	X	X	4735	143322	W042.7	152701	E123.9
4737A	B	1718	1829		X		X	X		X	X	X	4736	162054	W069.6	171433	E097.0
4738A	B	1905	2022		X		X	X		X	X		4737	180826	W096.4	190205	E070.2
4739A	B	2052	2210	X	X		X	X		X	X		4738	195558	W123.3	204937	E043.3
													4739	214330	W150.2	223709	E016.4
													4740	233102	W177.1	002441	W010.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
31 MAY 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
47400	B	2305	0009				X	X		X	X		4741	011834	E156.0	021213	W037.4
47410	B	0111	0213				X	X		X	X		4742	030606	E129.2	035945	W064.3
4742E	B	0256	0344		X		X	X		X	X		4743	045338	E102.3	054717	W091.1
4744E	B	0452	0545	X	X		X	X		X	X	X	4744	064110	E075.4	073449	W118.0
4745A	B	0752	0910	X	X		X	X		X	X		4745	082842	E048.5	092220	W144.9
4746A	B	0938	1057	X	X		X	X		X	X		4746	101614	E021.6	110952	W171.8
4747A	B	1124	1244	X	X		X	X		X	X		4747	120346	W005.3	125724	E161.3
4748A	B	1309	1427	X	X		X	X		X	X		4748	135118	W032.1	144456	E134.5
4749A	B	1453	1610		X		X	X		X	X	X	4749	153849	W059.0	163228	E107.6
4750A	B	1638	1756		X		X	X		X	X	X	4750	172621	W085.9	182000	E080.7
4751A	B	1822	1943	X	X		X	X		X	X		4751	191353	W112.8	200732	E053.8
4752A	B	2010	2128	X	X			X		X	X		4752	210125	W139.7	215504	E026.9
4753A	B	2157	2314	X	X			X		X	X		4753	224857	W166.6	234236	E000.0

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
01 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
47540	B	0029	0131					X		X	X		4754	003625	E166.6	013004	W026.8
4756E	B	0341	0446		X			X		X	X		4755	022357	E139.7	031736	W053.7
4758A	B	0545	0650		X			X		X	X	X	4756	041129	E112.8	050508	W080.6
4759A	B	0856	1014		X			X		X	X		4757	055901	E085.9	065240	W107.5
4760A	B	1044	1202		X			X		X	X		4758	074533	E059.1	084012	W134.4
4761A	B	1228	1348		X	X		X		X	X		4759	093405	E032.2	102744	W161.2
4762A	B	1413	1531		X	X		X	X	X	X		4760	112137	E005.3	121516	E171.9
4763A	B	1556	1715	X	X	X			X	X	X		4761	130909	W021.6	140248	E145.0
4764A	B	1714	1901	X	X	X			X	X	X		4762	145641	W048.5	155020	E118.1
4766A	B	2041	2232		X	X			X	X	X		4763	164413	W075.4	173752	E091.2
47670	B	2310	0014						X	X	X		4764	183145	W102.2	192523	E064.3
													4765	201917	W129.1	211255	E037.5
													4766	220649	W156.0	230027	E010.6
													4767	235421	E177.1	004759	W016.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
02 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
47680	B	0137	0237						X	X	X		4768	014153	E150.2	023531	W043.2
4769E	B	0320	0412		X				X	X	X		4769	032925	E123.3	042303	W070.1
4770E	B	0444	0549		X				X	X	X		4770	051657	E096.4	061035	W097.0
4771A	B	0630	0743		X				X	X	X		4771	070429	E069.6	075807	W123.8
4772A	B	0816	0933		X				X	X	X		4772	085200	E042.7	094539	W150.7
4773A	B	1001	1105		X				X	X	X		4773	103932	E015.8	113311	W177.6
4774A	B	1148	1307		X				X	X	X		4774	122704	W011.1	132043	E155.5
4775A	B	1332	1451	X	X				X	X	X		4775	141436	W038.0	150814	E128.7
4776A	B	1516	1633	X	X				X	X	X		4776	160208	W064.9	165547	E101.7
4777A	B	1700	1819	X	X				X	X	X		4777	174940	W091.7	184319	E074.8
4778A	B	1845	2004	X	X				X	X	X		4778	193712	W118.6	203051	E048.0
4779A	B	2033	2151		X				X	X	X		4779	212444	W145.5	221823	E021.1
4780A	B	2222	2337	X	X				X	X	X		4780	231216	W172.4	000555	W005.8
47800	B	2338	0042						X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
03 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
47810	B	0138	0230						X	X	X		4781	005948	E160.8	015327	W032.7
4783R	B	0408	0525	X	X				X	X	X		4782	024720	E133.9	034059	W059.6
4784R	B	0553	0710	X	X				X	X	X		4783	043452	E107.0	052831	W086.5
4786A	B	0920	1038	X	X				X	X	X		4784	062224	E080.1	071603	W113.3
4787A	B	1106	1225	X	X				X	X	X		4785	080956	E053.2	090335	W140.2
4788A	B	1252	1407		X				X	X	X		4786	095728	E026.3	105107	W167.1
4789A	B	1436	1553		X			X	X	X	X		4787	114500	W000.6	123839	E166.0
4790A	B	1620	1737	X	X			X		X	X		4788	133232	W027.5	142611	E139.2
4791A	B	1804	1924	X	X			X		X	X		4789	152004	W054.3	161343	E112.2
4792A	B	1955	2106	X	X			X		X	X		4790	170736	W081.2	180115	E085.4
4793A	B	2138	2256		X			X		X	X		4791	185508	W108.1	194847	E058.5
													4792	204240	W135.0	213619	E031.6
													4793	223012	W161.9	232351	E004.7

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
04 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4796R	B	0326	0431		X			X		X	X		4794	001744	E171.3	011123	W022.2
4797R	B	0512	0617		X			X		X	X		4795	020516	E144.4	025855	W049.0
4798A	B	0652	0808		X			X		X	X		4796	035248	E117.5	044627	W076.0
4799A	B	0838	0956	X	X			X		X	X		4797	054020	E090.6	063359	W102.8
4800A	B	1024	1144		X			X		X	X		4798	072752	E063.7	082131	W129.7
4801A	B	1210	1315		X			X		X	X		4799	091524	E036.8	100903	W156.6
4802A	B	1356	1513		X			X		X	X		4800	110256	E010.0	115635	E176.5
4803A	B	1538	1642		X			X		X	X		4801	125028	W016.9	134407	E149.7
4804A	B	1724	1842		X			X		X	X		4802	143800	W043.8	153139	E122.8
4805A	B	1909	2026		X			X		X	X		4803	162532	W070.7	171911	E095.9
4806A	B	2056	2214		X			X		X	X		4804	181304	W097.6	190643	E069.0
48070	B	2316	0019					X		X	X		4805	200036	W124.5	205415	E042.1
													4806	214808	W151.4	224147	E015.2
													4807	233540	W178.2	002919	W011.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
05 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
48080	B	0118	0217					X		X	X		4808	012312	E154.9	021651	W038.5
4809R	B	0301	0351		X			X		X	X		4809	031044	E128.0	040423	W065.4
4810R	B	0429	0534		X			X		X	X		4810	045816	E101.1	055155	W092.3
4811A	B	0612	0724		X			X		X	X		4811	064548	E074.2	073927	W119.2
4812A	B	0756	0914		X			X		X	X		4812	083320	E047.3	092659	W146.1
4813A	B	0944	1102		X			X		X	X		4813	102052	E020.5	111431	W173.0
4814A	B	1129	1249		X			X		X	X		4814	120824	W006.4	130203	E160.2
4815A	B	1313	1428		X			X		X	X		4815	135556	W033.3	144935	E133.3
4816A	B	1458	1616		X			X	X	X	X		4816	154328	W060.2	163707	E106.4
4817A	B	1642	1800		X				X	X	X		4817	173100	W087.1	182439	E079.5
4818A	B	1828	1946		X				X	X	X		4818	191832	W114.0	201211	E052.7
4819A	B	2016	2132		X				X	X	X		4819	210604	W140.9	215943	E025.8
4820A	B	2202	2318		X				X	X	X		4820	225337	W167.7	234715	W001.2
48200	B	2321	0026						X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
06 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
48210	B	0034	0137						X	X	X		4821	004111	E165.4	013450	W028.0
4823R	B	0349	0454		X				X	X	X		4822	022843	E138.5	032222	W054.9
4824R	B	0546	0639		X				X	X	X		4823	041615	E111.6	050954	W081.8
4825A	B	0716	0832		X				X	X	X		4824	060347	E084.7	065726	W108.7
4826A	B	0901	1018	X	X				X	X	X		4825	075119	E057.8	084458	W135.6
4827A	B	1048	1206	X	X				X	X	X		4826	093851	E031.0	103230	W162.4
4828A	B	1233	1345		X				X	X	X		4827	112623	E004.1	122002	E170.7
4829A	B	1418	1536		X				X	X	X		4828	131355	W022.8	140734	E143.8
4830A	B	1601	1719		X				X	X	X		4829	150128	W049.7	155506	E116.9
4831A	B	1746	1902	X	X				X	X	X		4830	164900	W076.6	174238	E090.0
4832A	B	1933	2051		X				X	X	X		4831	183632	W103.5	193010	E063.1
4833A	B	2120	2237		X				X	X	X		4832	202404	W130.3	211742	E036.2
48340	B	2338	0042						X	X	X		4833	221136	W157.2	230514	E009.4
													4834	235908	E175.9	005246	W017.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
07 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
48350	B	0137	0241						X	X	X		4835	014640	E149.0	024018	W044.4
4836R	B	0325	0415		X				X	X	X		4836	033412	E122.1	042750	W071.3
4837R	B	0453	0558		X				X	X	X		4837	052144	E095.2	061523	W098.2
4838A	B	0634	0749		X				X	X	X		4838	070916	E068.4	080255	W125.1
4839A	B	0820	0938	X	X				X	X	X		4839	085648	E041.5	095027	W152.0
4840A	B	1006	1125	X	X				X	X	X		4840	104420	E014.6	113759	W178.8
4841A	B	1152	1311		X				X	X	X		4841	123152	W012.3	132531	E154.3
4842A	B	1337	1455		X			X	X	X	X		4842	141925	W039.2	151303	E127.4
4843A	B	1520	1638		X			X		X	X	X	4843	160657	W066.1	170035	E100.5
4844R	B	1653	1757		X			X		X	X		4844	175429	W092.9	184807	E073.6
4845A	B	1850	2010		X			X		X	X		4845	194201	W119.9	203539	E046.8
4846A	B	2038	2153		X			X		X	X		4846	212933	W146.7	222311	E019.9
4847A	B	2228	2338		X			X		X	X		4847	231705	W173.6	001043	W007.0

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
08 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
48480	B	0101	0205					X		X	X		4848	010437	E159.5	015816	W033.9
4850R	B	0412	0516		X			X		X	X		4849	025209	E132.6	034548	W060.8
4851R	B	0558	0702		X			X		X	X		4850	043941	E105.8	053320	W087.7
4852A	B	0738	0855	X	X			X		X	X		4851	062718	E078.9	072052	W114.5
4853A	B	0924	1043		X			X		X	X		4852	081446	E052.0	090824	W141.4
4854A	B	1112	1230	X	X			X		X	X		4853	100218	E025.1	105556	W168.3
4855A	B	1256	1414		X			X		X	X		4854	114950	W001.8	124328	E164.8
4856A	B	1440	1557		X			X		X	X		4855	133722	W028.7	143100	E137.9
4857A	B	1624	1742	X	X		X	X		X	X		4856	152454	W055.6	161832	E111.0
4858A	B	1809	1928		X			X		X	X		4857	171226	W082.4	180604	E084.1
4860A	B	2144	2248		X			X		X	X		4858	185958	W109.3	195337	E057.3
													4859	204730	W136.2	214109	E030.4
													4860	223502	W163.1	232841	E003.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
09 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
48620	B	0002	0106					X		X-	X		4861	002234	E170.0	011613	W023.4
4863R	B	0345	0440		X			X		X	X		4862	021007	E143.1	030345	W050.3
4864R	B	0517	0622		X			X		X	X		4863	035739	E116.2	045117	W077.2
4865A	B	0657	0812		X			X		X	X		4864	054511	E089.4	063849	W104.1
4866A	B	0844	0959	X	X			X		X	X		4865	073243	E062.5	082621	W130.9
4867A	B	1029	1148	X	X			X		X	X		4866	092015	E035.6	101354	W157.8
4868A	B	1216	1333		X			X		X	X		4867	110747	E008.7	120126	E175.3
4869A	B	1400	1517	X	X			X	X	X	X		4868	125519	W018.2	134858	E148.4
4870A	B	1544	1701	X	X				X	X	X		4869	144251	W045.1	153630	E121.6
4871A	B	1728	1844	X	X				X	X	X		4870	163024	W071.9	172402	E094.6
4872A	B	1914	2033	X	X				X	X	X		4871	181756	W098.8	191134	E067.8
4873A	B	2101	2218	X	X				X	X	X		4872	200528	W125.7	205906	E040.9
4874A	B	2252	0005	X	X				X	X	X		4873	215260	W152.6	224638	E014.0
48740	B	0003	0106	X					X	X	X		4874	234032	W179.5	003411	W012.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
10 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
48750	B	0119	0222	X					X	X	X		4875	012804	E153.6	022143	W039.8
4876R	B	0305	0400	X	X				X	X	X		4876	031536	E126.8	040915	W066.6
4877R	B	0434	0538	X	X				X	X	X		4877	050309	E099.9	055647	W093.5
4878R	B	0624	0728	X	X				X	X	X		4878	065041	E073.0	074419	W120.4
4879A	B	0801	0919	X	X				X	X	X		4879	083813	E046.1	093151	W147.3
4880A	B	0948	1106	X	X				X	X	X		4880	102545	E019.2	111923	W174.2
4881A	B	1133	1252	X	X				X	X	X		4881	121317	W007.7	130656	E158.9
4882A	B	1318	1437	X	X	X			X	X	X		4882	140049	W034.6	145428	E132.0
4883A	B	1502	1620	X	X	X			X	X	X		4883	154821	W061.4	164160	E105.2
4886A	B	1947	2137		X	X			X	X	X		4884	173554	W088.3	182932	E078.3
4887A	B	2129	2324		X	X			X	X	X		4885	192326	W115.2	201704	E051.4
													4886	211058	W142.1	220436	E024.5
													4887	225830	W169.0	235209	W002.4

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
11 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4890R	B	0353	0458		X				X	X	X		4888	004602	E164.2	013941	W029.3
4891R	B	0540	0645		X				X	X	X		4889	023334	E137.3	032713	W056.2
4892A	B	0713	0836		X				X	X	X		4890	042107	E110.4	051445	W083.1
4893A	B	0858	1023		X				X	X	X		4891	060839	E083.5	070217	W109.9
4894A	B	1045	1211		X				X	X	X		4892	075611	E056.7	084949	W136.9
4895A	B	1238	1356		X				X	X	X		4893	094343	E029.7	103722	W163.7
4896A	B	1422	1539		X			X	X	X	X		4894	113115	E002.8	122454	E169.4
4897A	B	1605	1724		X			X	X	X	X		4895	131847	W024.0	141226	E142.6
4898A	B	1752	1910	X	X			X	X	X	X		4896	150620	W051.0	155958	E115.7
4899A	B	1938	2042		X			X	X	X	X		4897	165352	W077.8	174730	E088.8
4900A	B	2125	2242		X			X	X	X	X		4898	184124	W104.7	193502	E061.8
													4899	202856	W131.6	212235	E035.0

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
12 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	THWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4901C	B	2346	0142					X	X	X	X		4901	000400	E174.6	005739	W018.8
4902C	B	0148	0332					X	X	X	X		4902	015133	E147.8	024511	W045.6
4903R	B	0328	0428		X			X	X	X	X		4903	033905	E120.9	043243	W072.5
4904R	B	0458	0617		X			X	X	X	X		4904	052637	E094.0	062016	W099.4
4905A	B	0640	0752		X			X	X	X	X		4905	071409	E067.1	080748	W126.3
4906A	B	0824	0942		X			X	X	X	X		4906	090141	E040.2	095520	W153.2
4907A	B	1012	1129	X	X			X	X	X	X		4907	104914	E013.3	114252	E180.0
4908A	B	1157	1315		X			X	X	X	X		4908	123646	W013.6	133024	E153.0
4909A	B	1341	1459		X			X	X	X	X		4909	142418	W040.4	151756	E126.1
4910A	B	1525	1630		X			X	X	X	X		4910	161150	W067.3	170529	E099.3
4911A	B	1709	1829		X			X	X	X	X		4911	175922	W094.2	185301	E072.4
4912A	B	1856	2014		X			X	X	X	X		4912	194655	W121.1	204033	E045.5
4913A	B	2044	2200		X			X	X	X	X		4913	213427	W148.0	222805	E018.6
4914C	B	2319	0105	X			X	X	X	X	X		4914	232159	W174.9	001538	W008.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
13 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	THWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4915C	B	0136	0253	X				X	X	X	X		4915	010923	E158.3	020302	W035.1
4917R	B	0417	0535	X	X			X	X	X	X		4916	025655	E131.4	035034	W062.0
4918R	B	0604	0720		X			X	X	X	X		4917	044428	E104.5	053806	W088.9
4919A	B	0744	0900		X			X	X	X	X		4918	063160	E077.7	072538	W115.8
4920A	B	0929	1048		X			X	X	X	X		4919	081932	E050.8	091310	W142.6
4921A	B	1116	1234		X			X	X	X	X		4920	100704	E023.9	110043	W169.5
4922A	B	1301	1418	X	X			X	X	X	X		4921	115436	W003.0	124815	E163.6
4923A	B	1445	1559		X			X	X	X	X		4922	134209	W030.0	143547	E136.7
4924A	B	1628	1747		X			X	X	X	X		4923	152941	W056.8	162319	E109.8
4925A	B	1814	1933		X			X	X	X	X		4924	171713	W083.7	181051	E082.9
4926A	B	2002	2119		X			X	X	X	X		4925	190445	W110.6	195824	E056.0
4927A	B	2148	2253		X			X	X	X	X		4926	205217	W137.4	214556	E029.2
													4927	223949	W164.3	233328	E002.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
14 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4928O	B	0052	0211	X				X	X	X	X		4928	002722	E168.8	012100	W024.6
4929O	B	0205	0355					X	X	X	X		4929	021454	E142.0	030832	W051.5
4930R	B	0350	0453		X			X	X	X	X		4930	040226	E115.0	045605	W078.4
4931R	B	0521	0639	X	X			X	X	X	X		4931	054958	E088.2	064337	W105.3
4932A	B	0702	0817		X			X	X	X	X		4932	073730	E061.3	083109	W132.2
4933A	B	0848	1002		X			X	X	X	X		4933	092503	E034.4	101841	W159.0
4934A	B	1034	1152		X			X	X	X	X		4934	111235	E007.5	120613	E174.1
4935A	B	1220	1334		X			X	X	X	X		4935	130007	W019.4	135346	E147.2
4936A	B	1404	1519		X			X	X	X	X		4936	144739	W046.3	154118	E120.3
4937A	B	1532	1644		X			X	X	X	X		4937	163511	W073.2	172850	E093.4
4938A	B	1732	1850		X			X	X	X	X		4938	182244	W100.0	191622	E066.6
4939A	B	1920	2037		X			X	X	X	X		4939	201016	W127.0	210354	E039.7
4940A	B	2106	2224		X			X	X	X	X		4940	215748	W153.8	225127	E012.8
4941A	B	2257	0010		X			X	X	X	X		4941	234520	E179.3	003859	W014.1

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
15 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4942O	B	0125	0316					X	X	X	X		4942	013252	E152.4	022631	W041.0
4943R	B	0313	0410		X			X	X	X	X		4943	032025	E125.5	041403	W067.9
4944R	B	0440	0558	X	X			X	X	X	X		4944	050757	E098.6	060135	W094.8
4945A	B	0621	0733		X			X	X	X	X		4945	065529	E071.8	074908	W121.7
4946A	B	0806	0924		X			X	X	X	X		4946	084301	E044.9	093640	W148.5
4947A	B	0952	1110		X			X	X	X	X		4947	103033	E018.2	112412	W175.4
4948A	B	1138	1256		X			X	X	X	X		4948	121806	W008.9	131144	E157.7
4949A	B	1324	1428		X			X	X	X	X		4949	140538	W035.8	145917	E130.8
4950A	B	1532	1612		X			X	X	X	X		4950	155310	W062.7	164649	E104.0
4951A	B	1652	1809		X	X		X	X	X	X		4951	174042	W089.6	183421	E077.1
4952A	B	1804	1950		X	X		X	X	X	X		4952	192815	W116.4	202153	E050.2
4954A	B	1948	2327		X	X		X	X	X	X		4953	211547	W143.3	220925	E023.3
4954O	B	2327	0045					X	X	X	X		4954	230319	W170.2	235658	W003.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
16 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4955O	B	0043	0228	X				X	X	X	X		4955	005051	E162.9	014430	W030.5
4957R	B	0357	0515		X			X	X	X	X		4956	023824	E136.0	033202	W057.4
4958R	B	0544	0701		X			X	X	X	X		4957	042556	E109.2	051934	W084.4
4959A	B	0724	0840		X			X	X	X	X		4958	061328	E082.3	070707	W111.1
4960A	B	0910	1028		X			X	X	X	X		4959	080100	E055.4	085439	W138.0
4961A	B	1056	1205		X			X	X	X	X		4960	094832	E028.5	104211	W164.9
4962A	B	1241	1356		X			X	X	X	X		4961	113605	E001.6	122943	E168.2
4963A	B	1426	1539		X			X	X	X	X		4962	132337	W025.3	141716	E141.3
4964A	B	1610	1728		X			X	X	X	X		4963	151109	W052.3	160448	E114.4
4965A	B	1754	1914		X			X	X	X	X		4964	165841	W079.1	175220	E087.6
4967A	B	2128	2244		X			X	X	X	X		4965	184614	W105.9	193952	E060.7
													4966	203346	W132.8	212725	E033.8
													4967	222118	W159.7	231500	E006.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
17 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4968O	B	2346	0150					X	X	X	X		4968	000850	E173.4	010229	W020.0
4969O	B	0145	0248					X	X	X	X		4969	015623	E146.5	025001	W046.9
4971R	B	0502	0620		X			X	X	X	X		4970	034355	E119.7	043734	W073.8
4972A	B	0644	0756		X			X	X	X	X		4971	053127	E092.4	062506	W100.6
4973A	B	0828	0946		X			X	X	X	X		4972	071859	E065.9	081238	W127.5
4974A	B	1014	1134	X	X			X	X	X	X		4973	090632	E039.0	100010	W154.4
4975A	B	1200	1318		X			X	X	X	X		4974	105404	E012.1	114743	E178.7
4976A	B	1345	1502		X			X	X	X	X		4975	124136	W014.8	133515	E151.8
4977A	B	1528	1641		X			X	X	X	X		4976	142908	W041.7	152247	E124.9
4978A	B	1713	1830		X			X	X	X	X		4977	161641	W068.5	171019	E098.0
4979A	B	1900	2017		X			X	X	X	X		4978	180413	W095.4	185752	E071.2
4980A	B	2046	2201		X			X	X	X	X		4979	195145	W122.3	204524	E044.3
4981A	B	2238	2350		X			X	X	X	X		4980	213918	W149.2	223256	E017.4
													4981	232650	W176.1	002929	W009.5

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
18 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
4984R	B	0420	0524		X			X	X	X	X		4982	011422	E157.0	020801	W036.4
4985R	B	0608	0711		X			X	X	X	X		4983	030154	E130.1	035533	W063.3
4986A	B	0746	0905		X			X	X	X	X		4984	044927	E103.3	054305	W090.2
4987A	B	0933	1038		X			X	X	X	X		4985	063659	E076.4	073038	W117.1
4989A	B	1304	1413		X			X	X	X	X		4986	082431	E049.5	091810	W143.9
4990A	B	1448	1557		X			X	X	X	X		4987	101203	E022.6	110542	W170.8
4991A	B	1632	1750		X			X	X	X	X		4988	115936	W004.3	125315	E162.3
4992A	B	1817	1937		X			X	X	X	X		4989	134708	W031.4	144047	E135.4
4993A	B	2005	2123		X			X	X	X	X		4990	153440	W058.0	162819	E108.5
4994A	B	2152	2309		X			X	X	X	X		4991	172213	W084.9	181551	E081.7
													4992	190945	W111.8	200324	E054.8
													4993	205717	W138.7	215056	E027.9
													4994	224325	W165.2	233704	E001.4

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
19 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
49950	B	0005	0109					X	X	X	X		4995	003057	E167.9	012435	W025.5
49960	B	0209	0309					X	X	X	X		4496	021829	E141.0	031207	W052.4
4997R	B	0356	0440		X			X	X	X	X		4997	040600	E114.1	045939	W079.3
4998R	B	0525	0626		X			X	X	X	X		4998	055332	E087.2	064711	W106.2
4999A	B	0705	0822		X			X	X	X	X		4999	074104	E060.3	083442	W133.1
5000A	B	0852	1009		X			X	X	X	X		5000	092636	E033.5	102214	W159.9
5001A	B	1037	1157	X	X			X	X	X	X		5001	111608	E006.6	120946	E173.2
5002A	B	1224	1342		X			X	X	X	X		5002	130339	W020.3	135718	E146.3
5003A	B	1408	1526	X	X			X	X	X	X		5003	145111	W047.2	154450	E119.4
5004A	B	1552	1656		X			X	X	X	X		5004	163843	W074.1	173221	E092.5
5005A	B	1736	1855		X			X	X	X	X		5005	182615	W100.9	191953	E065.6
5006A	B	1924	2042		X			X	X	X	X		5006	201346	W127.8	210725	E038.8
5007A	B	2109	2227		X			X	X	X	X		5007	220118	W154.7	225457	E011.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
20 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
5008O	B	0011	0132					X	X	X	X		5008	234850	E178.4	004228	W015.0
5009O	B	0126	0227					X	X	X	X		5009	013622	E151.5	023000	W041.9
5010R	B	0311	0414		X			X	X	X	X		5010	032353	E124.6	041732	W068.8
5011R	B	0442	0602		X			X	X	X	X		5011	051125	E097.8	060504	W095.7
5012A	B	0624	0738		X			X	X	X	X		5012	065857	E070.9	075236	W122.5
5013A	B	0809	0928		X			X	X	X	X		5013	084629	E044.0	094007	W149.4
5014A	B	0956	1115	X	X			X	X	X	X		5014	103401	E017.1	112839	W176.3
5015A	B	1142	1302		X			X	X	X	X		5015	122132	W009.8	131511	E156.8
5016A	B	1326	1446		X			X	X	X	X		5016	140904	W036.7	150243	E129.9
5017A	B	1510	1629	X	X			X	X	X	X		5017	155636	W063.5	165014	E103.1
5018A	B	1654	1813		X			X	X	X	X		5018	174408	W090.4	183746	E076.2
5019A	B	1840	2000		X			X	X	X	X		5019	193140	W117.3	202518	E049.3
5020A	B	2028	2146		X			X	X	X	X		5020	211911	W144.2	221250	E022.4
5021A	B	2216	2331		X			X	X	X	X		5021	230643	W171.1	000022	W004.5
5021O	B	2328	0032					X	X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
21 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
5024R	B	0402	0519		X			X	X	X	X		5022	005415	E162.1	014753	W031.4
5025R	B	0548	0653		X			X	X	X	X		5023	024147	E135.2	033525	W058.2
5026A	B	0728	0846		X			X	X	X	X		5024	042918	E108.3	052257	W085.1
5027A	B	0914	1033		X			X	X	X	X		5025	061650	E081.4	071027	W112.0
5028A	B	1100	1220		X			X	X	X	X		5026	080422	E054.5	085800	W138.9
5034A	B	2133	2251		X			X	X	X	X		5027	095154	E027.6	104532	W165.8
													5028	113925	E000.8	123304	E167.3
													5029	132657	W026.1	142036	E140.5
													5030	151429	W053.0	160808	E113.6
													5031	170200	W079.9	171039	E086.7
													5032	184933	W106.8	194311	E059.8
													5033	203704	W133.7	213043	E032.9
													5034	222436	W160.5	231815	E006.1

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
22 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
50350	B	2341	0044					X	X	X	X		5035	001208	E172.6	010546	W020.8
50360	B	0150	0342					X	X	X	X		5036	015940	E145.7	025318	W047.7
5037R	B	0335	0439		X			X	X	X	X		5037	034711	E118.8	044050	W074.6
5038R	B	0506	0626		X			X	X	X	X		5038	053443	E091.9	062822	W101.5
5039A	B	0648	0802		X			X	X	X	X		5039	072215	E065.1	081554	W128.4
5040A	B	0832	0951		X			X	X	X	X		5040	090947	E038.2	100325	W155.2
5041A	B	1020	1138		X			X	X	X	X		5041	105718	E011.3	115057	E177.9
5042A	B	1205	1322		X			X	X	X	X		5042	124450	W015.6	133829	E151.0
5043A	B	1349	1508		X			X	X	X	X		5043	143222	W042.5	152601	E124.1
5044A	B	1533	1651		X			X	X	X	X		5044	161954	W069.4	171332	E097.2
5045A	B	1717	1837		X			X	X	X	X		5045	180726	W096.2	190104	E070.3
5046A	B	1904	2023		X			X	X	X	X		5046	195457	W123.1	204836	E043.5
5047A	B	2052	2209		X			X	X	X	X		5047	214229	W150.0	223608	E016.6
50480	B	2300	0005					X	X	X	X		5048	233001	W176.9	002340	W010.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
23 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
50490	B	0109	0115					X	X	X	X		5049	011733	E156.2	021111	W037.2
5051R	B	0426	0530		X			X	X	X	X		5050	030504	E129.3	035843	W064.1
5052R	B	0612	0726		X			X	X	X	X		5051	045236	E102.5	054615	W091.0
5053A	B	0752	0909		X			X	X	X	X		5052	064008	E075.6	073347	W117.9
5054A	B	0937	1056		X			X	X	X	X		5053	082740	E048.7	092118	W144.7
5055A	B	1124	1242		X			X	X	X	X		5054	101512	E021.8	110950	W171.6
5056A	B	1308	1426		X			X	X	X	X		5055	120243	W005.1	125622	E161.5
5057A	B	1452	1610		X			X	X	X	X		5056	135015	W032.0	144354	E134.6
5058A	B	1644	1755		X			X	X	X	X		5057	153747	W058.9	163126	E107.8
5060A	B	2009	2126		X			X	X	X	X		5058	172519	W085.7	181857	E080.9
5061A	B	2156	2313		X			X	X	X	X		5059	191250	W112.6	200629	E054.0
50610	B	2326	0031					X	X	X	X		5060	210022	W139.5	215401	E027.1
													5061	224754	W166.4	234133	E000.2

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
24 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
5062O	B	0028	0221					X	X	X	X		5062	003526	E166.8	012904	W026.7
5063O	B	0218	0403					X	X	X	X		5063	022257	E139.9	031636	W053.6
5064R	B	0359	0502		X			X	X	X	X		5064	041029	E113.0	050408	W080.5
5065R	B	0529	0648		X			X	X	X	X		5065	055801	E086.1	065140	W107.3
5066A	B	0710	0826		X			X	X	X	X		5066	074533	E059.2	083912	W134.2
5067A	B	0856	1014		X			X	X	X	X		5067	093305	E032.3	102643	W161.1
5068A	B	1041	1201		X			X	X	X	X		5068	112036	E005.5	121415	E172.0
5069A	B	1228	1346		X			X	X	X	X		5069	130808	W021.5	140147	E145.2
5070A	B	1413	1530		X			X	X	X	X		5070	145540	W048.3	154919	E118.3
5071A	B	1556	1714		X			X	X	X	X		5071	164312	W075.2	173650	E091.4
5072A	B	1740	1900		X			X	X	X	X		5072	183043	W102.1	192422	E064.5
5073A	B	1928	2046		X			X	X	X	X		5073	201815	W129.0	211154	E037.6
5074A	B	2114	2233		X			X	X	X	X		5074	220547	W155.8	225926	E010.8
													5075	235319	E177.3	004658	W016.2

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
25 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
5077R	B	0304	0420		X			X	X	X	X		5076	014051	E150.4	023429	W043.0
5078R	B	0448	0608		X			X	X	X	X		5077	032822	E123.5	042201	W069.9
5080A	B	0814	0932		X			X	X	X	X		5078	051554	E096.6	060933	W096.8
5081A	B	1000	1120		X			X	X	X	X		5079	070326	E069.8	075705	W123.7
5082A	B	1146	1306		X			X	X	X	X		5080	085058	E042.9	094437	W150.6
5083A	B	1332	1449		X			X	X	X	X		5081	103829	E016.0	113208	W177.5
5084A	B	1516	1620		X			X	X	X	X		5082	122601	W010.9	131940	E155.7
5085R	B	1648	1750		X			X	X	X	X		5083	141333	W037.8	150712	E128.8
5086A	B	1844	2004		X			X	X	X	X		5084	160105	W064.7	165444	E101.9
5087A	B	2032	2150		X			X	X	X	X		5085	174836	W091.6	184215	E075.0
5088A	B	2221	2337		X			X	X	X	X		5086	193608	W118.5	202947	E048.1
													5087	212340	W145.3	221719	E021.2
													5088	231111	W172.2	000451	W005.6

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
26 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
50880	B	2334	0054					X	X	X	X		5089	005844	E160.9	015223	W032.5
50890	B	0050	0244					X	X	X	X		5090	024615	E134.0	033954	W059.4
5091R	B	0409	0525		X			X	X	X	X		5091	043347	E107.1	052726	W086.3
5092R	B	0533	0710		X			X	X	X	X		5092	062119	E080.2	071458	W113.2
5094A	B	0918	1037		X			X	X	X	X		5093	080851	E053.4	090230	W140.0
5095A	B	1104	1225		X			X	X	X	X		5094	095622	E026.5	105001	W166.9
5097A	B	1250	1552		X			X	X	X	X		5095	114354	W000.4	123733	E166.2
5098A	B	1618	1737		X			X	X	X	X		5096	133126	W027.3	142505	E139.3
5099A	B	1804	1923		X			X	X	X	X		5097	151858	W054.2	161237	E112.4
5100A	B	1941	2109		X			X	X	X	X		5098	170629	W081.0	180009	E085.5
5101A	B	2137	2256		X			X	X	X	X		5099	185401	W107.9	194740	E058.7
													5100	204133	W134.8	213512	E031.8
													5101	222905	W161.7	232244	E004.9

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
27 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
51020	B	2346	0201					X	X	X	X		5102	001637	E171.4	011016	W022.0
51030	B	0154	0258					X	X	X	X		5103	020408	E144.5	025747	W048.9
5104R	B	0333	0443		X			X	X	X	X		5104	035140	E117.7	044519	W075.8
5105R	B	0512	0630		X			X	X	X	X		5105	053912	E090.8	063251	W102.6
5106A	B	0652	0806		X			X	X	X	X		5106	072644	E063.9	082023	W129.5
5107A	B	0837	0955		X			X	X	X	X		5107	091415	E037.0	100755	W156.4
5108A	B	1024	1142		X			X	X	X	X		5108	110147	E010.1	115526	E176.7
5109A	B	1209	1328		X			X	X	X	X		5109	124919	W016.8	134258	E149.8
5110A	B	1354	1511		X			X	X	X	X		5110	143651	W043.6	153030	E123.0
5111A	B	1537	1656		X			X	X	X	X		5111	162423	W070.5	171802	E096.1
5112A	B	1722	1842		X			X	X	X	X		5112	181154	W097.4	190533	E069.2
5113A	B	1908	2028		X			X	X	X	X		5113	195926	W124.3	205305	E042.3
5114A	B	2056	2213		X			X	X	X	X		5114	214658	W151.2	224037	E015.4
5115A	B	2245	0000		X			X	X	X	X		5115	233430	W178.0	002801	W011.5

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TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
28 JUNE 1976

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
5115O	B	2356	0119					X	X	X	X		5116	012201	E155.1	021541	W038.3
5116O	B	0114	0307					X	X	X	X		5117	030933	E128.2	040312	W065.2
5117R	B	0257	0356		X			X	X	X	X		5118	045705	E101.3	055044	W092.1
5118R	B	0428	0549		X			X	X	X	X		5119	064437	E074.4	073816	W119.0
5119A	B	0610	0723		X			X	X	X	X		5120	083208	E047.5	092548	W145.9
5120A	B	0756	0914		X			X	X	X	X		5121	101940	E020.7	111319	W172.8
5121A	B	0941	1101		X			X	X	X	X		5122	120712	W006.2	130051	E160.4
5122A	B	1128	1247		X			X	X	X	X		5123	135444	W033.1	144823	E133.5
5123A	B	1312	1430		X			X	X	X	X		5124	154216	W060.0	163555	E106.6
5124A	B	1456	1615		X			X	X	X	X		5125	172947	W086.9	182327	E079.7
5126A	B	1803	1946		X			X	X	X	X		5126	191719	W113.8	201058	E052.8
5127A	B	2014	2132		X			X	X	X	X		5127	210451	W140.6	215830	E025.9
5128A	B	2201	2319		X			X	X	X	X		5128	225223	W167.5	234602	W000.9
5128O	B	2316	0036					X	X	X	X						

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
29 JUNE 1976

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
5129O	B	0033	0225					X	X	X	X		5129	003954	E165.6	013334	W027.8
5130O	B	0222	0321					X	X	X	X		5130	022726	E138.7	032105	W054.7
5132R	B	0534	0652		X			X	X	X	X		5131	041458	E111.8	050837	W081.6
5133R	B	0714	0830		X			X	X	X	X		5132	060230	E085.0	065609	W108.5
5134A	B	0900	1018		X			X	X	X	X		5133	075001	E058.1	084341	W135.3
5135A	B	1046	1205		X			X	X	X	X		5134	093733	E031.2	103113	W162.4
5136A	B	1232	1348		X			X	X	X	X		5135	112505	E004.3	121844	E170.9
5137A	B	1416	1534		X			X	X	X	X		5136	131237	W022.6	140616	E144.0
5138A	B	1600	1718		X			X	X	X	X		5137	150009	W049.5	155348	E117.1
5139A	B	1744	1905		X			X	X	X	X		5138	164740	W076.3	174120	E090.2
5140A	B	1932	2050		X			X	X	X	X		5139	183512	W103.2	192851	E063.4
5141A	B	2118	2235		X			X	X	X	X		5140	202244	W130.1	211623	E036.5
5142A	B	2312	0021		X			X	X	X	X		5141	221016	W157.0	230355	E009.6
													5142	235747	E176.1	005127	W017.3

TABLE 2-2
DATA AVAILABILITY ON-OFF TIMES
30 JUNE 1976

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
51420	B	0020	0142					X	X	X	X		5143	014519	E149.2	023859	W044.2
51430	B	0136	0320					X	X	X	X		5144	033251	E122.4	042630	W071.1
5144R	B	0320	0415		X			X	X	X	X		5145	052023	E095.5	061402	W097.9
5145R	B	0453	0612		X			X	X	X	X		5146	070754	E068.6	080134	W124.8
5146A	B	0633	0747		X			X	X	X	X		5147	085526	E041.7	094906	W151.7
5147A	B	0818	0937		X			X	X	X	X		5148	104258	E014.8	113637	W178.6
5148A	B	0936	1124	X	X	X		X	X	X	X		5149	123030	W012.0	132409	E154.5
5149A	B	1150	1306		X			X	X	X	X		5150	141801	W038.9	151141	E127.7
5150A	B	1336	1453		X			X	X	X	X		5151	160533	W065.8	165913	E100.8
5151A	B	1520	1637		X			X	X	X	X		5152	175305	W092.7	184645	E073.9
5152A	B	1704	1816		X			X	X	X	X		5153	194037	W119.6	203416	E047.0
5153A	B	1849	2008		X			X	X	X	X		5154	212809	W146.5	222148	E020.1
5154A	B	2037	2153		X			X	X	X	X		5155	231540	W173.3	000920	W006.9
5155A	B	2225	2340		X			X	X	X	X						

SECTION 3

ORBIT DISPLAYS OF HIRS, SCAMS, AND ESMR

This section briefly describes the HIRS, SCAMS and ESMR experiments, explains the formats of the image displays derived from the data of these three experiments, and presents image examples from each of them. Complete descriptions of the HIRS, SCAMS and ESMR experiments are found in Sections 3, 4, and 5, respectively, of The Nimbus 6 User's Guide.

The HIRS is a 17-channel radiometer. Sixteen channels have central wavelengths between 3.7μm and 15μm, and one is centered at 0.69μm to measure reflected sunlight. Spatial resolution at the nadir on the earth's surface is about 25 km (13 n.m.).

The SCAMS is a 5-channel scanning radiometer. Channel 1 lies on a water vapor line near 22 GHz. Channel 2 is on an atmospheric window near 32 GHz. Channels 3, 4, and 5 are within the oxygen band near 54 GHz. Spatial resolution varies from about 145 km (80 n.m.) near nadir to about 330 km (180 n.m.) at the scan limits.

The ESMR is a two-channel scanning radiometer receiving microwave radiation in a 250 MHz band centered at 37 GHz. One channel is used to measure the vertical polarization of the radiation, and the other measures the horizontal polarization. The antenna beam scans ahead of the spacecraft along a conical surface with a constant angle of 45 degrees with respect to the antenna axis. Spatial resolution of each element is about 20 km in the cross-track direction by 45 km in the direction parallel to the subpoint track.

All HIRS, SCAMS, and ESMR data are converted to 4" x 5" black and white images. Selected images from each experiment from May and June 1976 are presented in this section. Complete coverage times for each experiment are listed in the Data Availability On-Off Times in Table 2-2.

Sections 3, 4, and 5 of The Nimbus 6 User's Guide describe in detail the image formats of the HIRS, SCAMS, and ESMR. The following is a summary of the format, detailing changes to the User's Guide where needed. Each display contains the following similar items:

- NIMBUS 6 (HIRS, SCAMS, or ESMR)

  This identifies the satellite and the experiment.

- (DATE)

  This identifies the Greenwich month, day, and year the data were recorded on board the satellite.

- SCALE F (P2)

All data from the three experiments have been displayed in the F (full-scale) mode with one exception. Since orbit 3933, ESMR has operated in the P (partial mode). For each experiment the data from each interrogation orbit is displayed on a single image. Each HIRS scan line is displayed once. Each of the 42 scan-spot elements across a scan is displayed four times. Each SCAMS scan line is displayed three times in succession. Each of the 13 scan-spot elements across a scan line is displayed ten times. Through orbit 3932 (31 March), each ESMR scan line is displayed once and twice after orbit 3933. Similarly, each of the 71 scan-spot elements is displayed once through orbit 3932 and twice after orbit 3933.

- INT ORBIT

The interrogation orbit number identifies the orbit in progress when the recorded data is transmitted to a STDN station. Usually parts of two data orbits are on the same display. The interrogation orbit number will only identify the last orbit of each display.

- TIME (and) SUBPOINT

Satellite time and latitude-longitude information are presented along the vertical line down the center of each display. The line represents the satellite subpoint track, which is located down the center of each of the swaths on each display. Time is GMT with ticks along the left side of the line at each five minute mark (on the five minutes). Time is annotated (hour and minute) every 15 minutes (on the quarter hour).

Subpoint information presents latitude and longitude positions of the satellite subpoint. Each tick mark on the right side of the vertical line is annotated with the subpoint latitude and longitude (to the nearest degree). Latitude is labeled N (north) or S (south). Longitude is labeled E (east) or W (west).

After orbit 3933, the ESMR data display was changed. The following condensed changes apply for TIME and SUBPOINT information: Satellite time information is presented along the vertical lines to the left and to the right of the data display. Time is GMT with 5 minute ticks marks. Time annotations consist of hour-minute displays with 15 minute intervals or quarter-hour notations.

Latitude and longitude coordinates are in grid form centrally placed between two sets of data; each data set are a compliment of the appropriate grid overlay immediately adjacent to it's border. For a complete description of new format see ESMR CHANNEL-RANGE DISPLAYS, this section of the catalog.

- GRAY SCALE

  Each image has an 18-step gray scale along the bottom of the display. The gray scales are used to define parameter value intervals for each image swath of each display by assigning different parameter values to the gray scale for each swath. Tables 3-1 through 3-5 define the parameter values versus gray scale for each HIRS, SCAMS, and ESMR image swath.

- 3200

  This identifies the computer used to process the data. All data was processed by the Control Data Corporation (CDC) 3200.

While the preceeding format information is similar for HIRS, SCAMS, and ESMR, the swath displays of the data from each experiment are different. Therefore, the following information describes the swath displays for each experiment for this catalog period.

HIRS CHANNEL-RANGE DISPLAYS

Each of the ten swaths on the HIRS displays is described by a "CHANNEL (and) RANGE." The CHANNEL is the HIRS channel number (1 through 17), and the RANGE is the computer program table used to display the data from each channel as temperatures (°K). The CHANNEL-RANGE program used during this catalog period is listed in Table 3-1. The HIRS displays shown in Section 3.1 are examples of the data displayed from each orbit during this period.

The HIRS displays through orbit 1140 (5 September) are similar to the example shown in Volume 2 Section 3.1 for orbit 1114 (3 September). Starting with orbit 1141, however, excessive bit slips began occurring and have continued through this catalog period. These bit slips and increasing HIRS system noise make the imagery after orbit 1140 of limited usefulness. Therefore, only two images are included to illustrate the effects of these problems on the imagery and to conclude the last image display series with this catalog period. (HIRS Filter Chopper motor failed and the subsystem was turned off as a precautionary measure (ORBIT 4697, 27 May).) See Section 2, Table 2-2, Data Availability for specific ON/OFF times for this catalog period.

SCAMS PARAMETER DISPLAYS

The SCAMS displays currently contain eight vertical swaths of data, as shown in the SCAMS figures in Section 3.2. Each swath is labeled with a parameter number. After orbit 3675 (12 March 76), three distinct sets of parameters are displayed as shown in Table 3-2. Included in Table 3-2 are the values of the gray scale for each image swath. The parameter values for the contoured swaths are given in Table 3-3.

Table 3-1

Temperature Range of Gray Scale and Channel of HIRS Data for Each Swath on Each HIRS Image Display Between Orbits 748 and 4697 (7 August 1975 through 27 May 1976)

	Swath Number									
	1	2	3	4	5	6	7	8	9	10
HIRS Channel Display (channel-range)*	08-08	16-16	16-21	18-18	17-17	10-10	12-12	14-14	03-03	15-15
Temperature Range (°K) (black-white)	310-230	310-230	310-270	0-50	100-900	280-210	300-210	300-210 **	240-185	300-185 ***

*The HIRS channel number is number before the hyphen The number after the hyphen is the computer program table used to display the data from each channel as temperatures (°K). The range of temperatures displayed in each swath is given beneath each "HIRS Channel Display" The 18 steps of the gray scale are used to represent the division of each temperature range into 18 approximately equal temperature intervals. The central wavelength (in μm) of each channel on these displays is channel 3 = 14 4, 8 = 11 0, 9 = 8 2, 10 = 6 7, 12 = 4.52, 14 = 4.40, 15 = 4.24, 16 = 3.71, 17 = 0.61, and 18 is the temperature difference between channel 16 and channel 8. The values of channel 17-17 are albedo, represented as "counts" between 100 (blackest) and 900 (whitest). The values for 16-21 represent a second temperature range for channel 16 data. Table 3-1 on page 39 in the User's Guide provides detailed spectral information and the purpose of each of the HIRS channels.

**14-14 temperature range changed to 245-205 on orbit 3929A (31 March 1976).

***15-15 temperature range changed to 275-210 on orbit 3166A (26 January 1976)

Table 3-2

Parameter Limits of the Gray Scale for Parameters 1, 2, 3, 5, 11, 12, and 16 on the SCAMS Image Displays Between Orbits 426 and 4751 (14 July 1975 and 31 May 1976)

	Swath		1	2	3	4	5
Orbits 426 thru 1425 1 July 75 thru 26 Sept. 75	Parameter		3	2	16	11	12
	Gray Scale Value	black	280	320	10	60	1.5
			°K	°K	°K	g/mm^2	g/mm^2
		white	210	100	–22	0.0	–0.1*
Orbits 1426 thru 3675 26 Sept. 75 thru 12 March 76	Parameter		3	2	16	11	12
	Gray Scale Value	black	280	320	10	60	2.0
			°K	°K	°K	g/mm^2	g/mm^2
		white	210	100	–22	0.0	0.0
Orbits 3676 thru 3899 12 March 76 thru 29 March 76	Parameter		5	2	16	11	12
	Gray Scale Value	black	240	320	10	70	2.0
			°K	°K	°K	g/mm^2	g/mm^2
		white	200	100	–22	0.0	0.0
Orbits 3900 thru 3929 29 March 76 thru 31 March 76	Parameter		1	1	1	5	3
	Gray Scale Value	black	220	265	300	240	280
			°K	°K	°K	°K	°K
		white	130	210	260	200	220
Orbits 3930 thru 4584 31 March 76 thru 19 May 76	Parameter		1	1	1	2	3
	Gray Scale Value	black	220	265	300	320	280
			°K	°K	°K	°K	°K
		white	130	210	260	100	220
Orbits 4585 thru 4751 19 May 76 thru 31 May 76	Parameter		1	1	1	5	3
	Gray Scale Value	black	220	260	290	240	280
			°K	°K	°K	°K	°K
		white	130	200	245	180	220

*1.6 to 0.0 between orbit 426 and 477

Parameters 1, 2, 3, 5, and 16 represent uninverted antenna temperatures for channels 1 (22.24 GHz), 2 (31.65 GHz), 3 (52.85 GHz), and 5 (55.45 GHz). Parameter 16 is the temperature difference between channels 2 and 3. Parameters 11 and 12 represent inverted antenna temperatures of integrated atmospheric water vapor (channel 11) and integrated liquid water from clouds or precipitation.

Table 3-3

Contour Program Options Used for Parameters 13, 14, and 15 on the SCAMS Image Displays Between Orbit 426 and 4751 (14 July 1975 through 31 May 1976)

Contour options	Parameters: 13 Mean temperature between 1000 mb and 500 mb	14 Mean temperature between 500 mb and 250 mb	15 Mean temperature between 250 mb and 100 mb	Valid for orbits
Contour interval	4°K	4°K	4°K	426-851
Contour thickness	1°K	1°K	1°K	(14 July - 14 Aug. 1975)
Contour interval	4°K	4°K	4°K	852-4751
Contour thickness	2°K	2°K	2°K	(14 Aug. 1975 - 31 May 1976)

Parameters 2, 3, and 16 represent uninverted antenna temperatures. Parameters 2 and 3 represent the antenna temperatures (T_A) for channels 2 (31.65 GHz) and 3 (52.85 GHz). Parameter 16 is the temperature difference between channel 2 and 3.

Parameters 16 and 2 are sensitive to surface characteristics such as ice and snow cover and soil moisture content, as well as the obvious difference in emissivity between land and water. Parameter 3 is principally a measure of lower tropospheric temperature, but is significantly perturbed by surface emissivity and to some extent by atmospheric water vapor and precipitation.

Parameters 11 and 12 represent inverted antenna temperatures. Parameter 11 portrays the integrated atmospheric water vapor and parameter 12 portrays the integrated liquid water from clouds or precipitation. These two parameters are valid only over the oceans. Only SCAMS channels 1 and 2 were used to estimate these two parameters. The data is inverted by a statistical method and the parameters are computed by linear operations on the antenna temperatures for each scan angle separately.

Parameters 13, 14, and 15 are mean temperatures (averaged over the logarithm of pressure) for the atmospheric layers between 1000 mb and 500 mb, 500 mb and 250 mb, and 250 mb and 100 mb, respectively. These temperatures are displayed by contour bands. The bands are spaced 4 degrees K apart, with alternate bands a darker shade of gray (although in some cases problems in photographic processing caused both shades to be saturated white). Prior to orbit 852 (14 August), the bands were approximately

1 degree thick. After this orbit, the thickness was increased to about 2 degrees, so that contour boundaries (between black and gray or white) are evenly spaced at about 2 degree intervals. Each band is labeled, space permitting, with the lowest temperature value within it, i.e., its lower boundary. Prior to orbit 778 (9 August), parameters 13, 14, and 15 were estimated using only the data from SCAMS channels 3, 4, and 5. Coefficients used in the calculations were determined under the assumption of an ocean surface, so the resulting values were incorrect over land. Starting with orbit 778, channels 1 and 2 were also incorporated into the inversion to correct for the effects of surface emissivity and water vapor. However, there is no correction for surface elevation, so mountains and plateaus still introduce errors in the estimated values.

From orbit 3900 (29 March) through orbit 4469 (10 May), parameters 1, 2, and 5, represent uninverted antenna temperatures. The need to use data in this form was occasioned by the occurrence of major scan problems with the channel 2 scan reflector. The loss of data from channel 2 prevented retrieval of atmospheric water vapor and liquid water during this catalog period; however, the inversion matrices for atmospheric temperature were redefined to exclude channel 2, and temperature retrievals were continued until 31 May.*

ESMR CHANNEL-RANGE DISPLAYS

Through orbit 3932 (31 March) the ESMR displays contained 20 swaths of data, as shown in the ESMR image displays up to orbit 3932 in Section 3.3. The swaths are numbered (numbers not shown) from 1 on the left to 20 on the right. Each of the ten swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 3-4. The right set of ten swaths has a similar format, and displays the earliest recorded data. If the right swaths were cut and placed above the group on the left, the new display would show the continuous coverage recorded for that orbit. Swaths 1 and 11 have the same polarization and temperature range. Similarly, swaths 2 and 12, 3 and 13, etc., are the same. Table 3-4 is set up to show this duplication of parameter information.

The ESMR display format was modified at orbit 3933 (31 March 1976). After this orbit all displays will have the following new format.

The new displays contain ten swaths of data plus a geographic grid overlay for each swath, as shown in the ESMR image displays after orbit 3933 in Section 3.3.

The swaths are numbered (numbers not displayed) from 1 on the left to 10 on the right. Each of the five swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature

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*SCAMS Experimenter's Contribution

Table 3-4

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 828 through 3932 (13 August 1975 through 31 March 1976) (Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter									
	1 and 11 (T_H)	2 and 12 (T_V)	3 and 13 $\left(\frac{T_H+T_V}{2}\right)$	4 and 14 (T_H)	5 and 15 (T_V)	6 and 16 $\left(\frac{T_H+T_V}{2}\right)$	7 and 17 (T_H)	8 and 18 (T_V)	9 and 19 $\left(\frac{T_H+T_V}{2}\right)$	10 and 20 (T_V-0.6T_H)
(black) 1	> 200	> 230	> 210	> 250	> 270	> 250	> 290	> 300	> 280	> 140
2	196-200	226-230	206-210	246-250	267-270	247-250	287-290	298-300	278-280	136-140
3	191-196	223-226	203-206	243-246	264-267	244-247	284-287	295-298	275-278	133-136
4	187-191	219-223	199-203	239-243	261-264	241-244	281-284	293-295	273-275	129-133
5	183-187	215-219	195-199	235-239	258-261	238-241	278-281	290-293	270-273	125-129
6	178-183	211-215	191-195	231-235	254-258	234-238	274-278	288-290	268-270	121-125
7	174-178	208-211	188-191	228-231	251-254	231-234	271-274	285-288	265-268	118-121
8	169-174	204-208	184-188	224-228	248-251	228-231	268-271	283-285	263-265	114-118
9	165-169	200-204	180-184	220-224	245-248	225-228	265-268	280-283	260-263	110-114
10	161-165	196-200	176-180	216-220	242-245	222-225	262-265	278-280	258-260	106-110
11	156-161	193-196	173-176	213-216	239-242	219-222	259-262	275-278	255-258	103-106
12	152-156	189-193	169-173	209-213	236-239	216-219	256-259	273-275	253-255	99-103
13	148-152	185-189	165-169	205-209	233-236	213-216	253-256	270-273	250-253	95-99
14	143-148	181-185	161-165	201-205	229-233	209-213	249-253	268-270	248-250	91-95
15	139-143	178-181	158-161	198-201	226-229	206-209	246-249	265-268	245-248	88-91
16	134-139	174-178	154-158	194-198	223-226	203-206	243-246	263-265	243-245	84-88
17	130-134	170-174	150-154	190-194	220-223	200-203	240-243	260-263	240-243	80-84
(white) 18	< 130	< 170	< 150	< 190	< 220	< 200	< 240	< 260	< 240	< 80

T_H = Brightness temperature derived from the ESMR horizontal polarization data

T_V = Brightness temperature derived from the ESMR vertical polarization data

range as listed in Table 3-5. The right set of five swaths has a similar format, and displays the latest recorded data. If the right swaths were cut and placed below the group on the left, the new display would show the continuous coverage of that display.

Swaths 1 and 6 display the same parameter. That is, the temperature range and polarization for swaths 1 and 6 are the same. Similarly, swaths 2 and 7, 3 and 8, 4 and 9, and 5 and 10 display the same parameters. Table 3-5 is set up to show this duplication of parameter information.

Data time (GMT) references for the left set of five swaths are shown adjacent to the vertical line at the left. Time tick marks are every five minutes with hour and minute annotation every fifteen minutes. Data time references for the right set of five swaths are shown in a similar manner adjacent to the vertical line at the right.

The center portion of the display contains two swaths of grid overlay information: the left grid for overlay on each of the five swaths on the left, and the right grid for overlay on each of the five swaths on the right. The grid longitudes are generated at ten degree intervals between 55 degrees south and 55 degrees north, and at 20 degree intervals from 55 degrees to the Poles. Latitude grids are generated every five degrees. All grid lines consist of a series of dots at one degree intervals. Latitudes are labeled at 60°S, 30°S, EQ, 30°N, and 60°N. Longitude labels are normally placed next to each latitude label.

Table 3-5

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 3933 through 5155 (31 March through 30 June 1976)

(Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter				
	1 and 6 (T_H)	2 and 7 (T_H)	3 and 8 (T_H)	4 and 9 (T_V)	5 and 10 $\left(\frac{T_H + T_V}{2}\right)$
(black) 1	> 200	> 230	> 210	> 250	> 270
2	196-200	296-230	206-210	246-250	267-270
3	191-196	223-226	203-206	243-246	264-267
4	187-191	219-223	199-203	239-243	261-264
5	183-187	215-219	195-199	235-239	258-261
6	178-183	211-215	191-195	231-235	254-258
7	174-178	208-211	188-191	228-231	252-254
8	169-174	204-208	184-188	224-228	248-251
9	165-169	200-204	180-184	220-224	245-248
10	161-165	196-200	176-180	216-220	242-245
11	156-161	193-196	173-176	213-216	239-242
12	152-156	189-193	169-173	209-213	236-239
13	148-152	185-189	165-169	205-209	233-236
14	143-148	181-185	161-165	201-205	229-233
15	139-143	178-181	158-161	198-201	226-229
16	134-139	174-178	154-158	194-198	223-226
17	130-134	170-174	150-154	190-194	220-223
(white) 18	< 130	<170	<150	<190	< 220

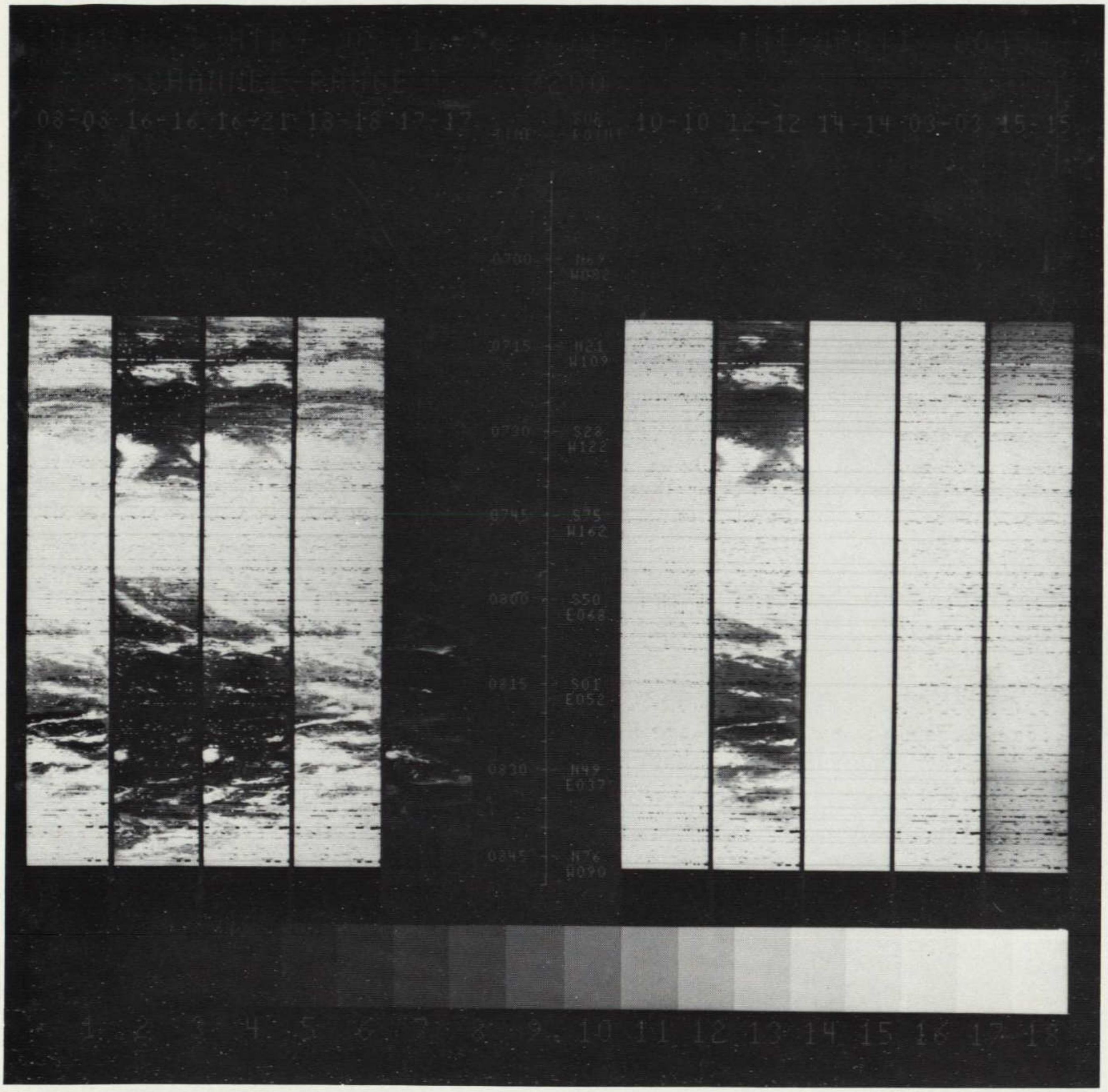
T_H = Brightness temperature derived from the ESMR horizontal polarization data

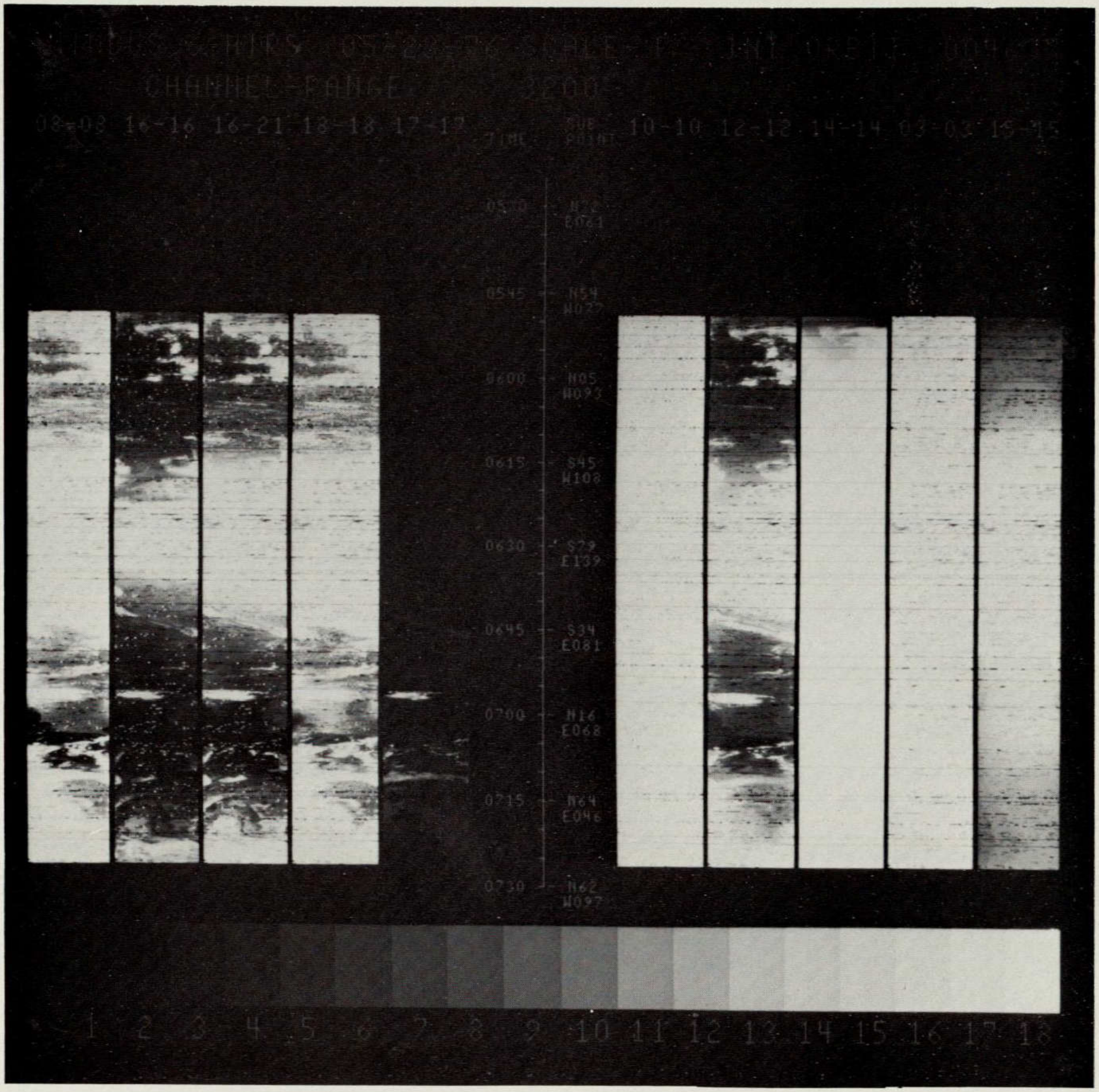
T_V = Brightness temperature derived from the ESMR vertical polarization data

SECTION 3.1

SELECTED HIRS IMAGE DISPLAYS

Only two displays of HIRS are shown here. Because of an instrument problem, displays after orbit 1140 (5 September) have limited usefulness. These displays are presented as examples of the information available in displays for orbits 1140 through 4637 when the HIRS instrument was turned off.




CHANNEL RANGE
08-08 16-16 16-21 18-18 17-17
TIME
SUB POINT
10-10 12-12 14-14 03-03 15-15
0545 N54 W027
0600 N05 W093
0615 S45 W108
0630 S79 E139
0645 S34 E081
0700 N16 E068
0715 N64 E046
0730 N62 W097
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

SECTION 3.2

SELECTED SCAMS IMAGE DISPLAYS

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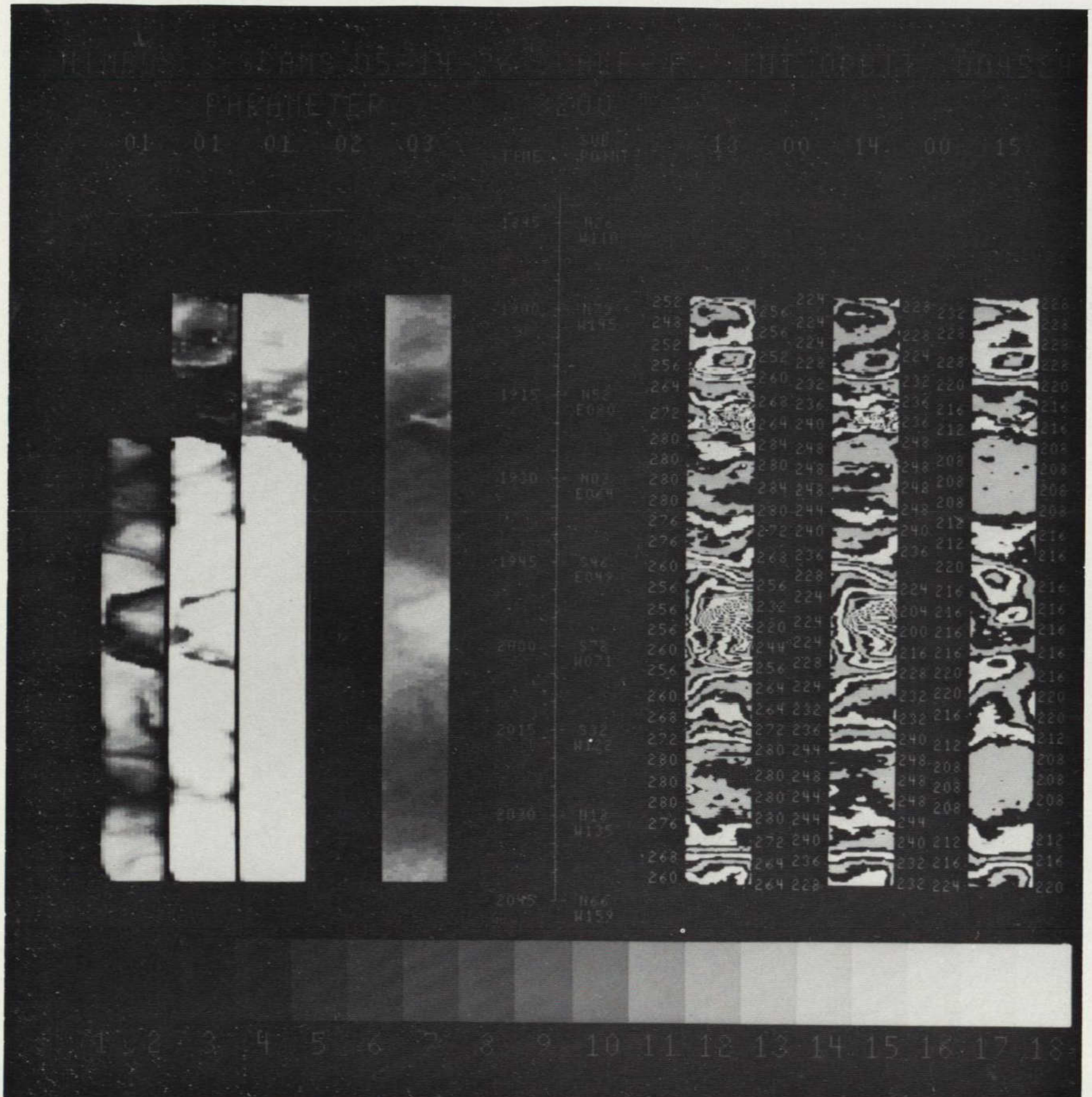
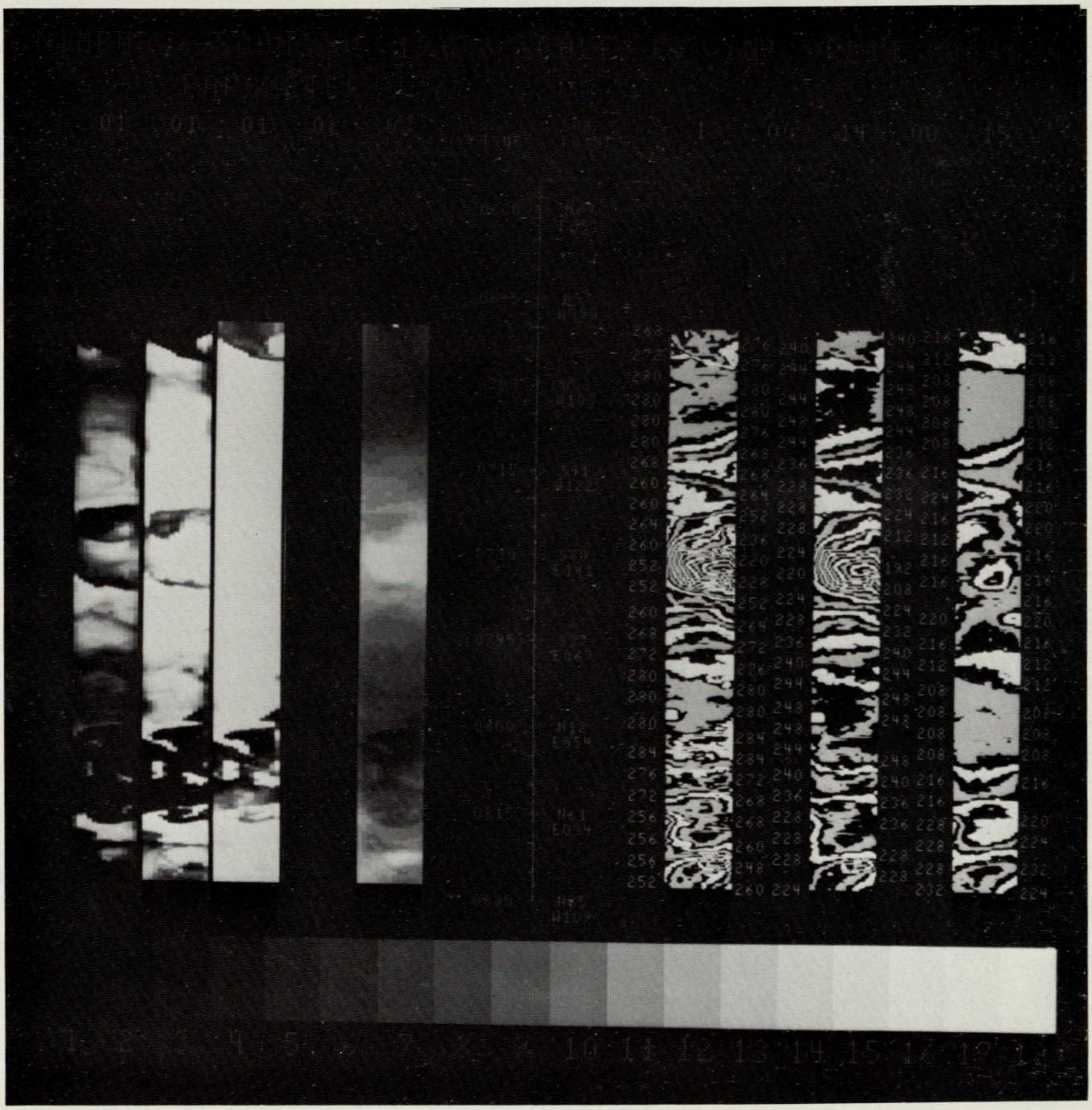
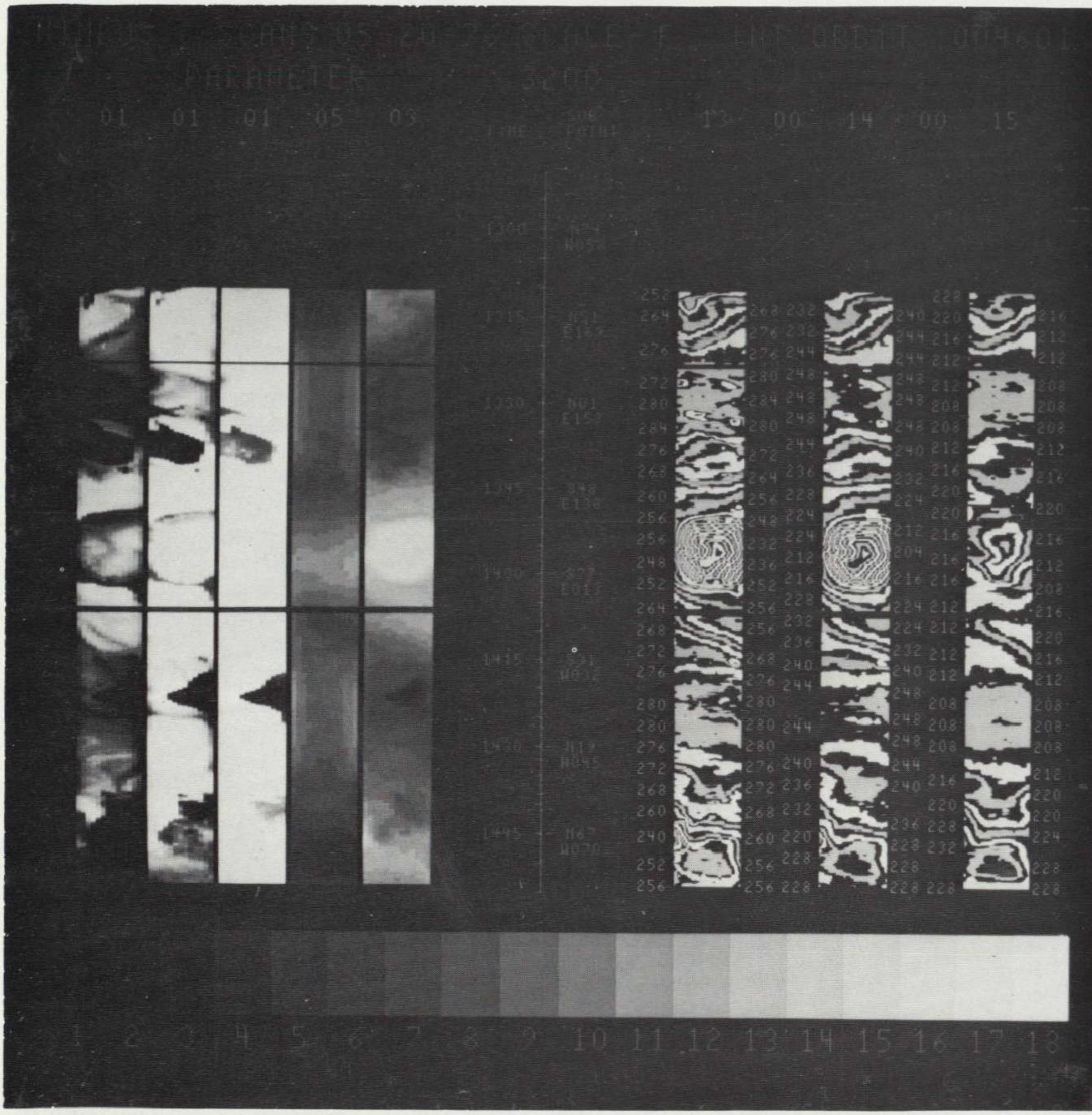
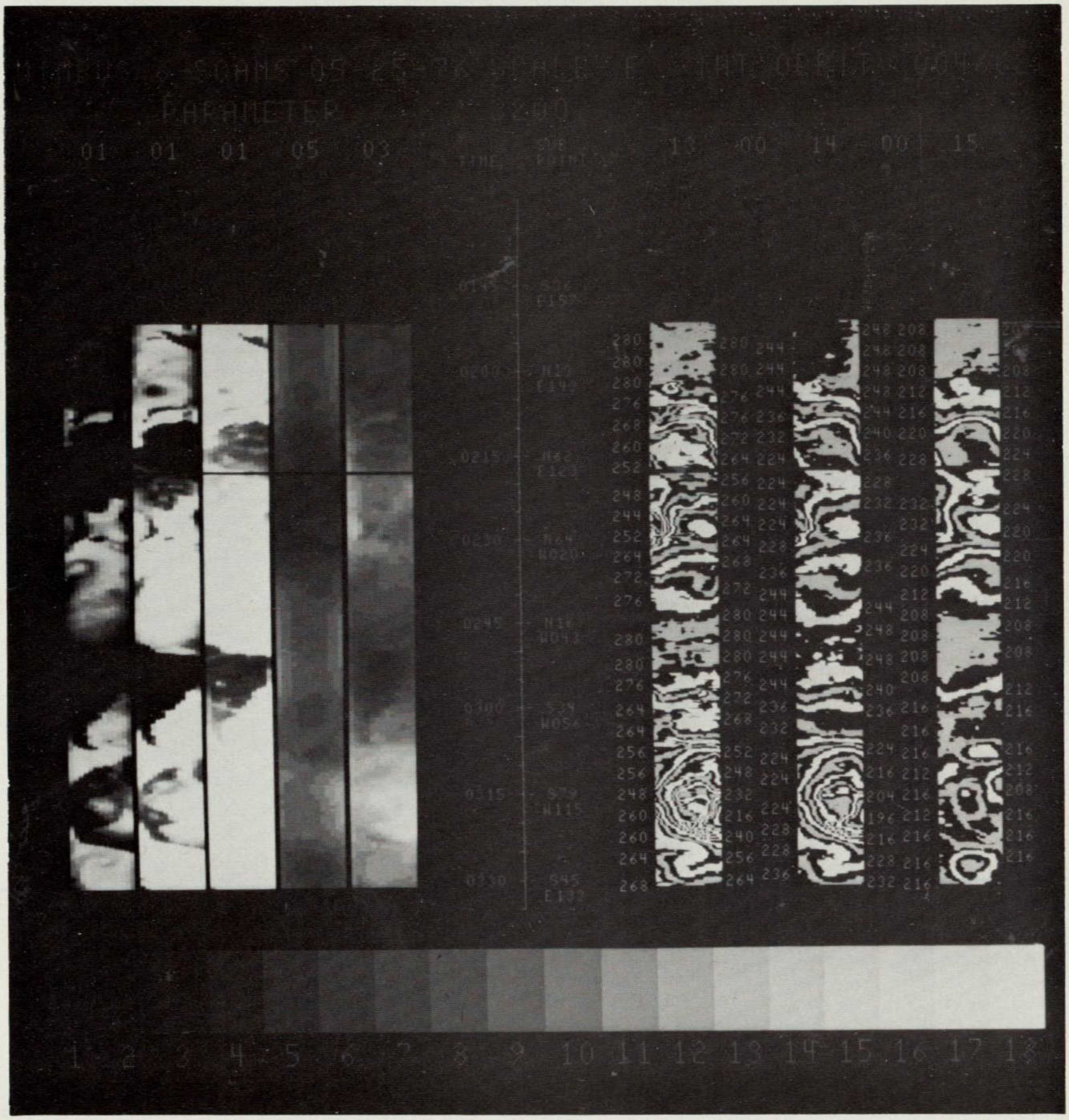
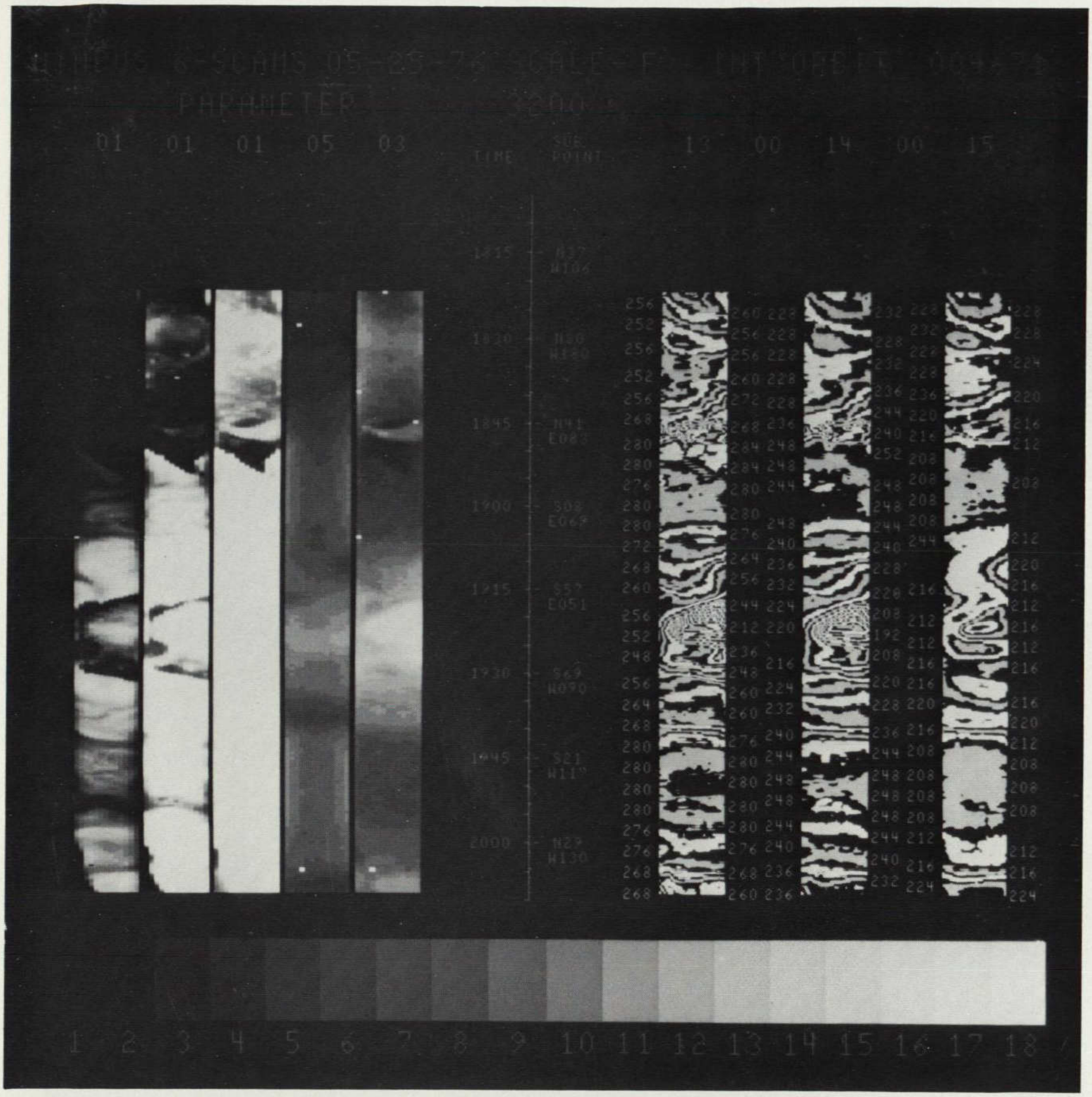





PARAMETER 3200
01 01 01 05 03
13 00 14 00 15
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18


PARAMETER
01 01 01 05 03
13 00 14 00 15
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



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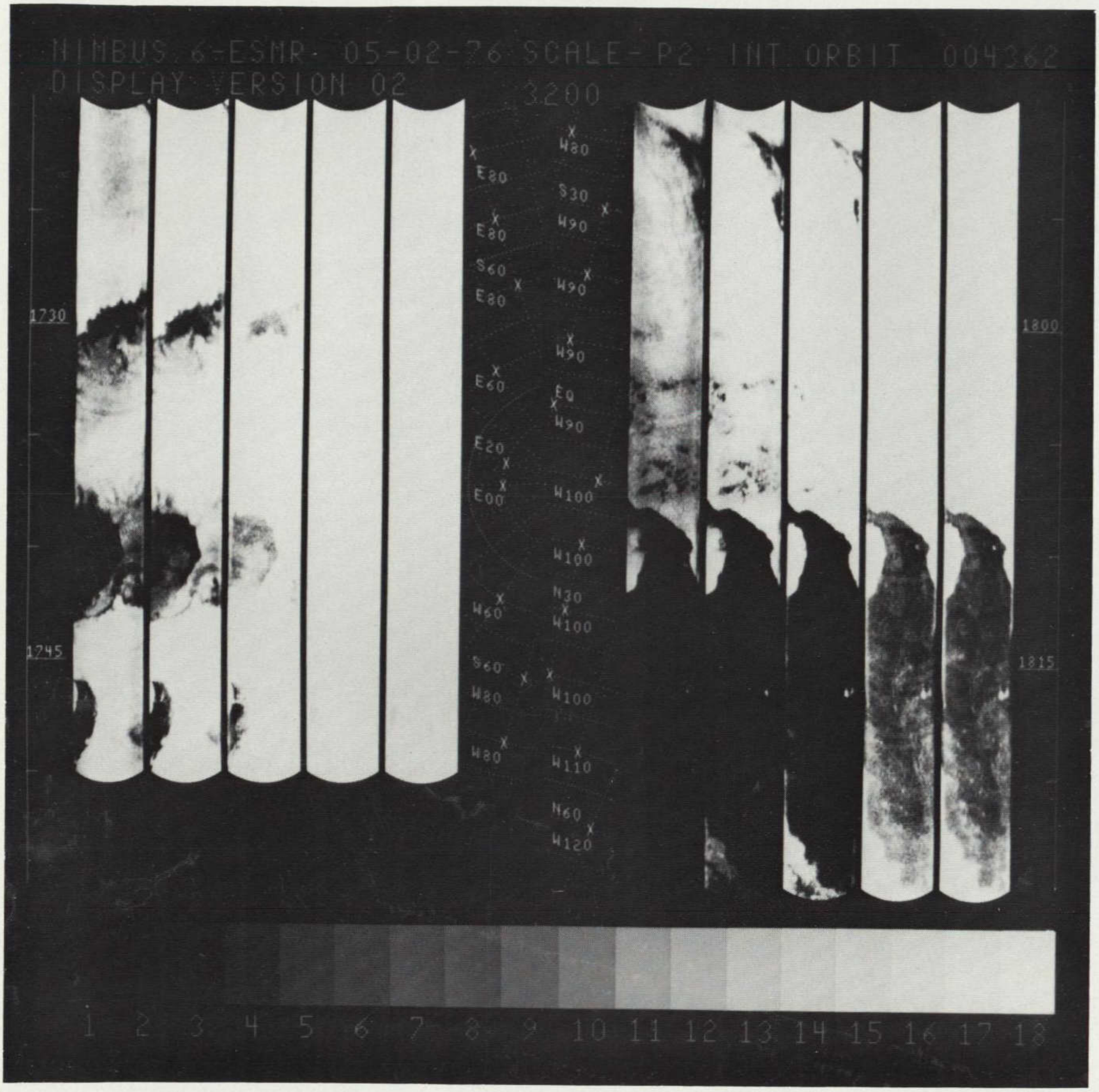
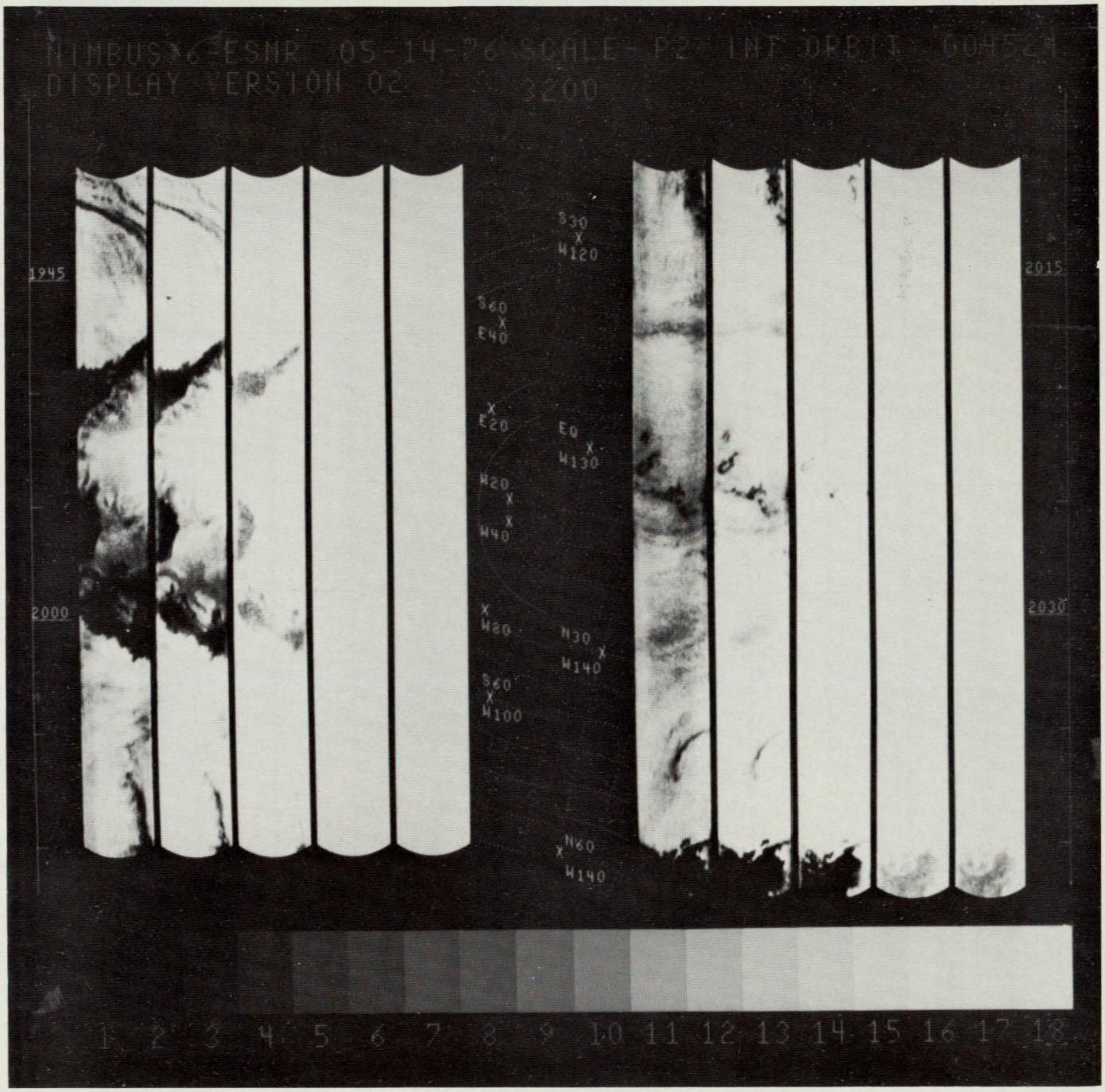
SECTION 3.3

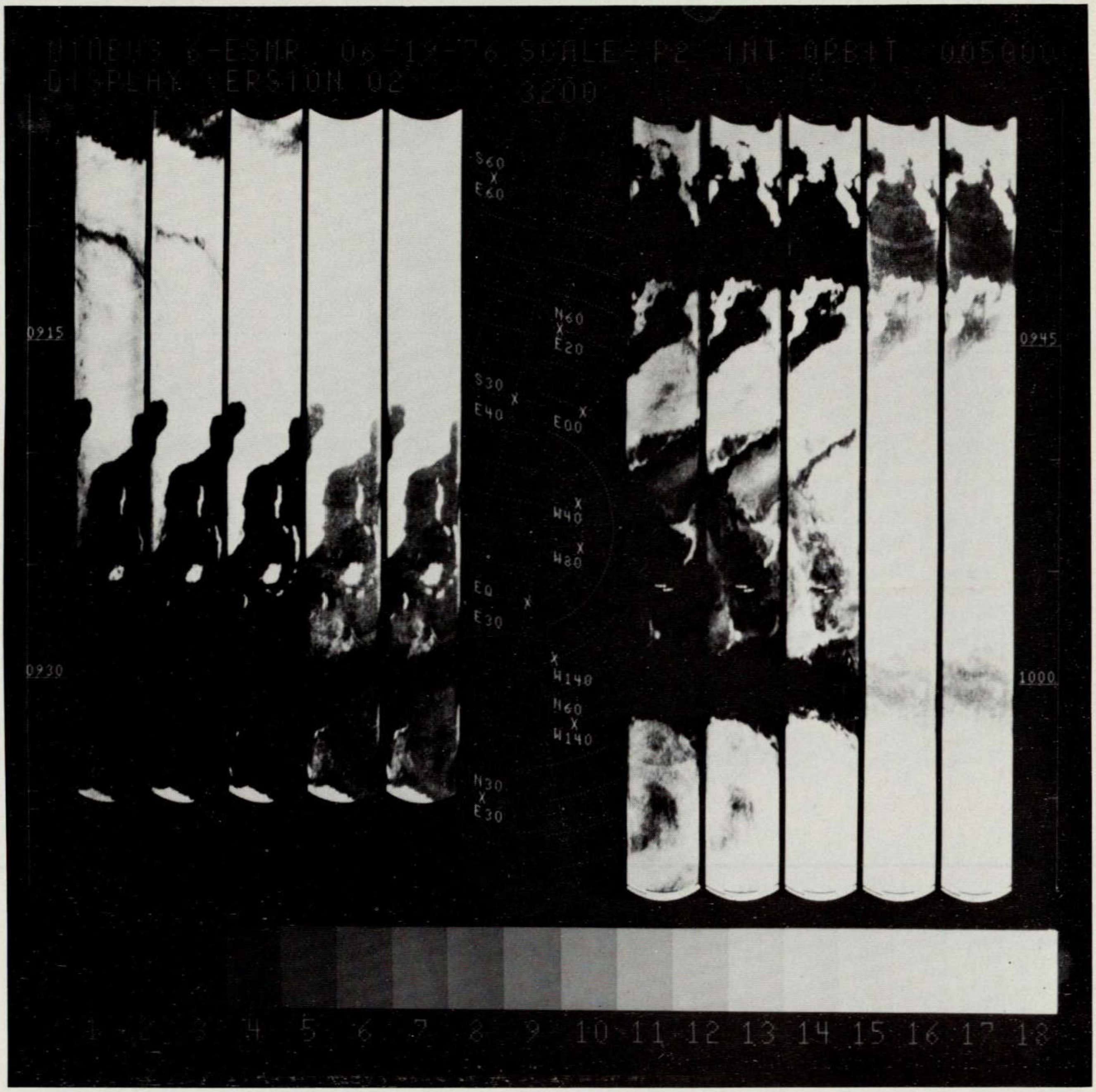
SELECTED ESMR IMAGE DISPLAYS


NIMBUS 6-ESMR 05-02-76 SCALE-P2 INT ORBIT 004362
DISPLAY VERSION 02
3200
1730
1745
1800
1815
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



NIMBUS-6 ESMR 05-14-76 SCALE-P2 INT ORBIT 004521
DISPLAY VERSION 02 3200
1945
2000
2015
2030
S30 W120
S60 E40
E20
EQ W130
W20
W40
W80
N30 W140
S60 W100
N60 W140
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18


NIMBUS 6-ESMR 05-19-76 SCALE- P2 INT ORBIT 004580
DISPLAY VERSION 02 3200
0130
0145
0200
0215
E00
S30
W40
W60
E00
S60
W60
W30
W20
W80
W120
W140
E0
W30
E180
S60
E160
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



0915
0930
0945
1000
S60 X E60
N60 X E20
S30 X E40
X E00
X W40
X W80
EQ X E30
X W140
N60 X W140
N30 X E30
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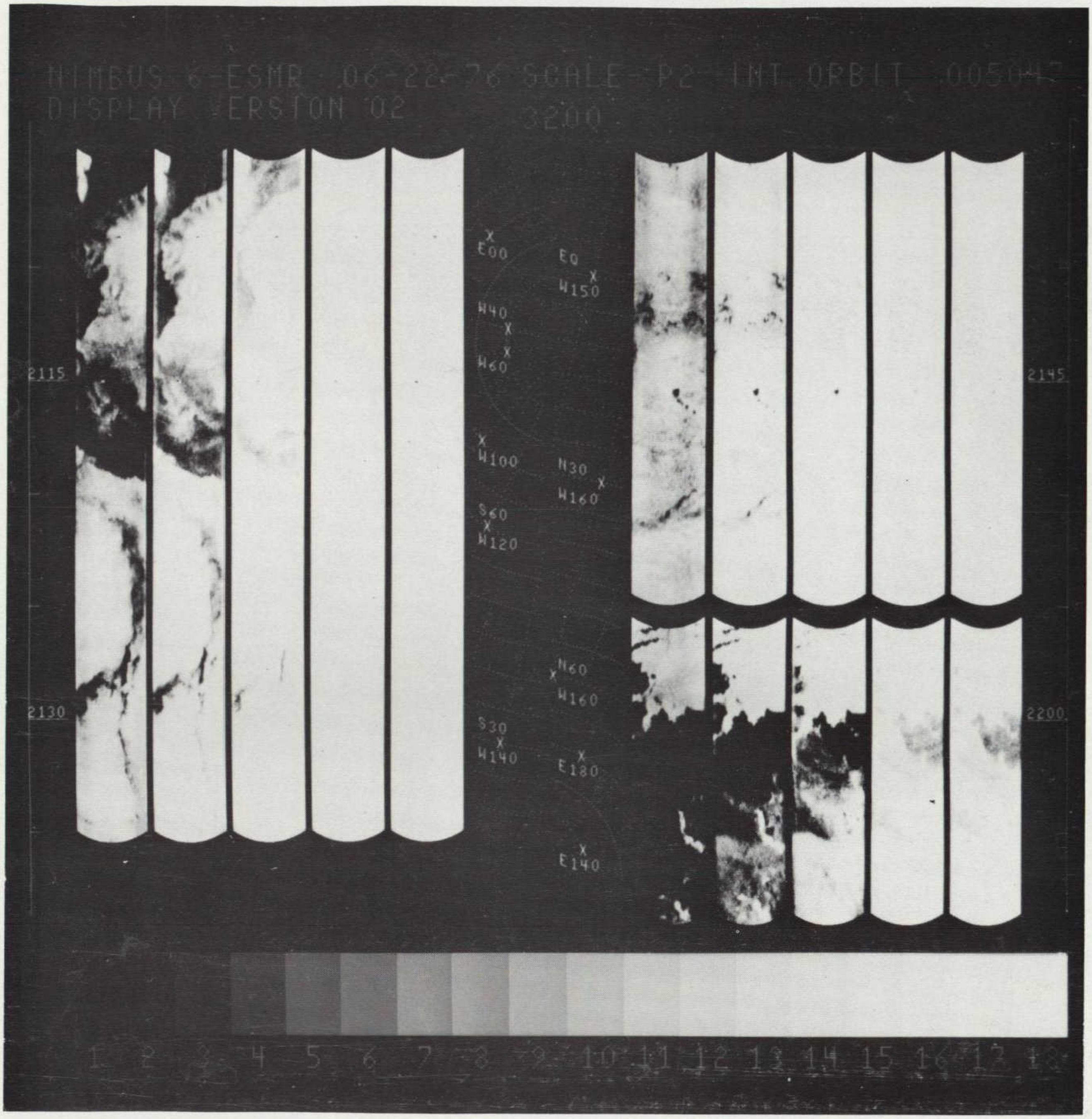

NIMBUS 6 ESMR 06-22-76 SCALE P2 INT ORBIT 005047
DISPLAY VERSION 02
3200
E00
EQ
W150
W40
W60
2115
2145
W100
N30
W160
S60
W120
N60
W160
2130
2200
S30
W140
E180
E140
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18


NIMBUS 6-ESMR 06-30-76 SCALE- P2 INT ORBIT 005144
DISPLAY VERSION 02 3200
0315
0345
0330
0400
S60 X E140
N60 X E100
S30 X E130
X E100
E40 X
E80 X
EQ X E120
W40 X
N60 X
W60
N30 X E120
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

SECTION 4

TEMPERATURE HUMIDITY INFRARED RADIOMETER MONTAGES

The Nimbus 6 Temperature Humidity Infrared Radiometer (THIR) subsystem is of the same design and operation as the THIR flown on Nimbus 4 and 5. The two-channel scanning radiometer measures earth radiation in two spectral bands. A 10.3 μm to 12.5 μm (11.5 μm) window channel provides an image of the cloud cover, and temperatures of the cloud tops, land, and ocean surfaces. A 6.5 μm to 7.1 μm (6.7 μm) channel provides information on the moisture content of the upper troposphere and stratosphere, and the location of jet streams and frontal systems. Ground resolution at the satellite subpoint is 8.2 km for the 11.5 μm channel and 22.5 km for the 6.7 μm channel. Both channels operate continuously to provide day and night global coverage. However, with only HDRSS recorder (A) available for full-time use on the satellite, gaps in global coverage occur over "blind" orbit areas, and sometimes over the Rosman and Alaska STDN stations, when the tape data are being transmitted to the ground. The blind orbits occur during a daytime pass over the western part of the Pacific Ocean and during a nighttime pass over the eastern part of the Atlantic Ocean. These blind orbit areas happen when the Orroral, Australia is not available for playback of recorded data. Then the time between successive playbacks of the tape recorder becomes longer than the reduced record capability of HDRSS B.

This section pictorially documents the data from the THIR. Section 4.1 contains all nighttime THIR 11.5 μm and 6.7 μm montages and Section 4.2 contains all daytime THIR 11.5 μm and 6.7 μm montages, arranged in chronological order. Key latitudes can be read from the superimposed grids. Grid points are identified where each swath crosses 60°N, 30°N, EQUATOR, 30°S and 60°S.

Vellum Location Guide overlays, attached to the back of this document, are to be used for general orientation with the data presented in each THIR montage. Proper alignment of the overlay grid is accomplished by matching the grid indices on the equator with the two "T" marks on each montage.

THIR photographic data and/or digital data can be ordered through the National Space Science Data Center (NSSDC), Code 601, Goddard Space Flight Center, Greenbelt, Maryland 20771.

THIR photographic data consist of 70 mm film strips produced from the radiometer output signals. The gray shades in each image correspond to temperature variations of the land, sea, and clouds. On a film positive the lightest tones represent cold temperatures, while the darkest tones represent warm temperatures. THIR photographic data are archived in separate 6.7 μm and 11.5 μm daytime and nighttime swaths. The approximate coverage of a full swath is from pole to pole.

When ordering THIR photographic data from NSSDC the following information should be given:

- Satellite (e. g. Nimbus 6)
- Date of data
- Data orbit number, channel (11.5 μm or 6.7 μm), and whether day or night data
- Data format, i. e., positive or negative transparencies, or prints
- Area of interest defined by latitude and longitude

In addition to the THIR film strips, photographic copies of the daily day or night montages prepared from film strips can be obtained.

Quantitative digital data are obtained when the original analog signals are digitized with full fidelity, and processed by an IBM 360 computer, where calibration and geographic referencing are applied. Each reduced radiation data tape prepared by the IBM 360 is called a Nimbus Meteorological Radiation Tape-THIR (NMRT-THIR). The NMRT can be used to generate grid print maps or to accomplish special scientific analyses. The format of this tape may be found in The Nimbus 6 User's Guide, Section 2.

Due to the large volume and the long computer running time required for processing THIR into NMRTs, Nimbus 6 THIR digital data are not routinely reduced to final NMRT format. Only those data which are specifically requested by the user will be processed. Requests should be made through NSSDC. It is anticipated that requested NMRT-THIR will begin to be available through NSSDC six months after launch. The user is urged to make full use of the film strips which are abundantly available in nearly real time from the NSSDC.

A series of programs at GSFC produce printed and contoured data referenced to a grid on Polar Stereographic or Mercator map bases. These are called grid print maps. The advantages of the grid print map presentation are the display of absolute values of temperatures in their approximate location and geographical rectification of the data. Grid print maps may be produced for either a single orbit or a composite of several orbits. The following standard options are available and should be specified when requesting grid print maps from NSSDC.

- Map and Approximate Scale

  a. Polar Stereographic, 1:30 million

  b. Polar Stereographic, 1:10 million

c. Multi-resolution Mercator maps are available down to 1:1 million scale.

- Maximum Scan Angle (50 degrees is practical limit)

- Field Values and Contouring. Unless otherwise specified, all maps will include field values and contouring except Mercator maps of scales larger than 1:20 million. A data population map, indicating the number of individual measurements contained in each grid point average, as well as a latitude-longitude description for geographically locating the data, will be provided along with each grid print map.

When ordering grid print map data, the following identifying information should be given:

- Satellite (e.g., Nimbus 6)

- Sensor (THIR)

- Channel (6.7 μm or 11.7 μm)

- Data Orbit Number

- Calendar Date of Equator Crossing

- Beginning and Ending Times of Data in GMT

- Latitude and Longitude Limits of Area of Interest

- Map Type and Map Scale

- Scan Angle Limits

- Contouring or No Contouring of Data Points

When ordering NMRTs, the "Calendar Date of Equator Crossing" and "Map type and Map Scale" can be omitted.

Beginning and ending times of data in GMT can be interpolated using Table 4-1 which gives the elapsed time from either ascending or descending node as a function of latitude. These elapsed time values can be appropriately added or subtracted from node times given in Table 2-2.

A complete description of the THIR experiment may be found in The Nimbus 6 User's Guide, Section 2.

Table 4-1

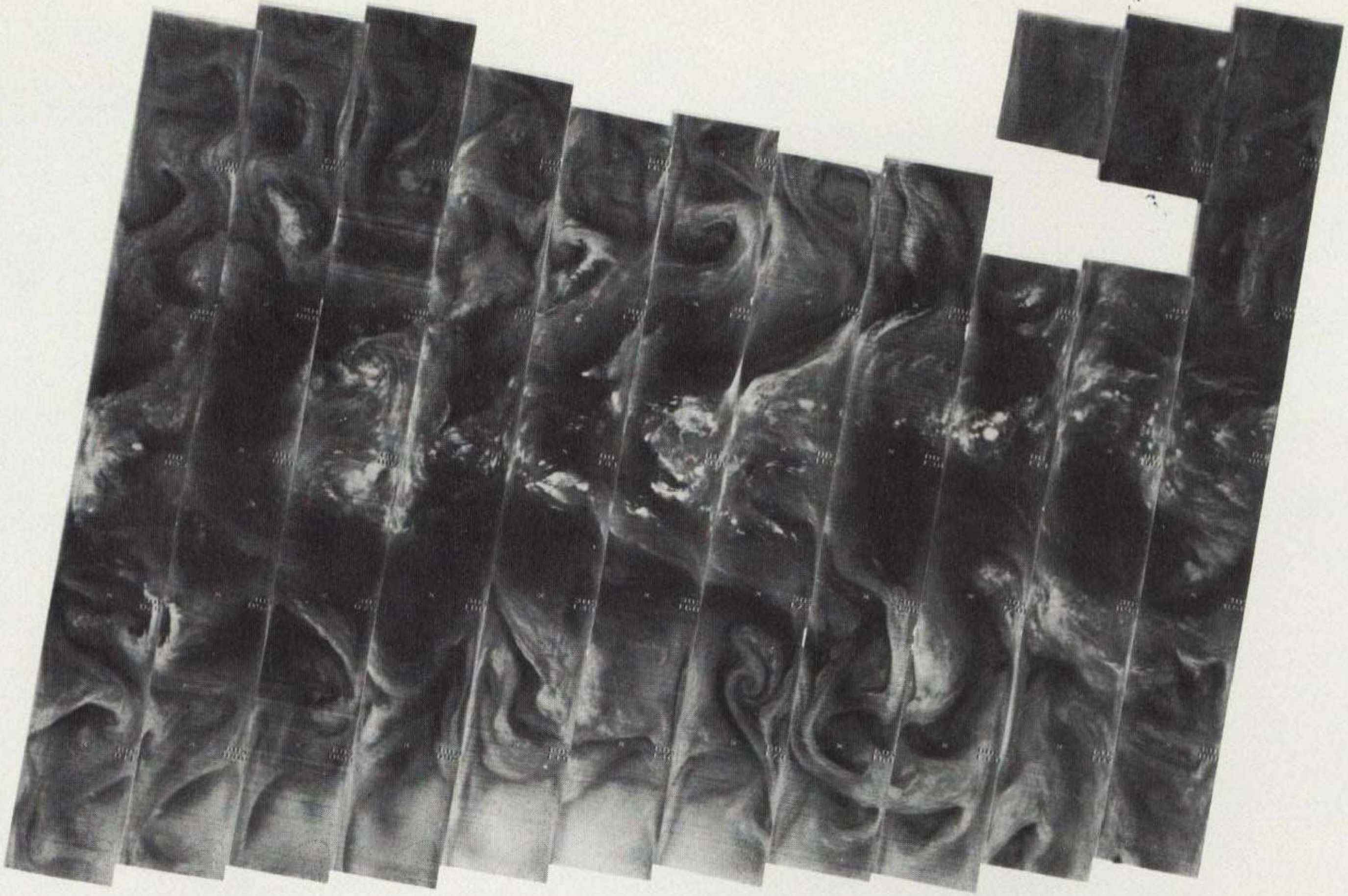
Latitude Versus Minutes From
Ascending or Descending Node

Latitude from AN or DN	Minutes and Seconds from AN or DN
0	0:00
5	1:31
10	3:02
15	4:33
20	6:03
25	7:34
30	9:05
35	10:36
40	12:08
45	13:40
50	15:12
55	16:44
60	18:18
65	19:52
70	21:33
75	23:26
78	24:44
80.1	26:49
78	29:00
75	30:09
70	31:51
65	33:35

SECTION 4.1

TEMPERATURE HUMIDITY INFRARED RADIOMETER

NIGHTTIME MONTAGES



4351 4350 4349 4348 4347 4346 4345 4344 4343 4342 4341 4340 4339

1 MAY 1976

6.7μm

ORIGINAL PAGE IS
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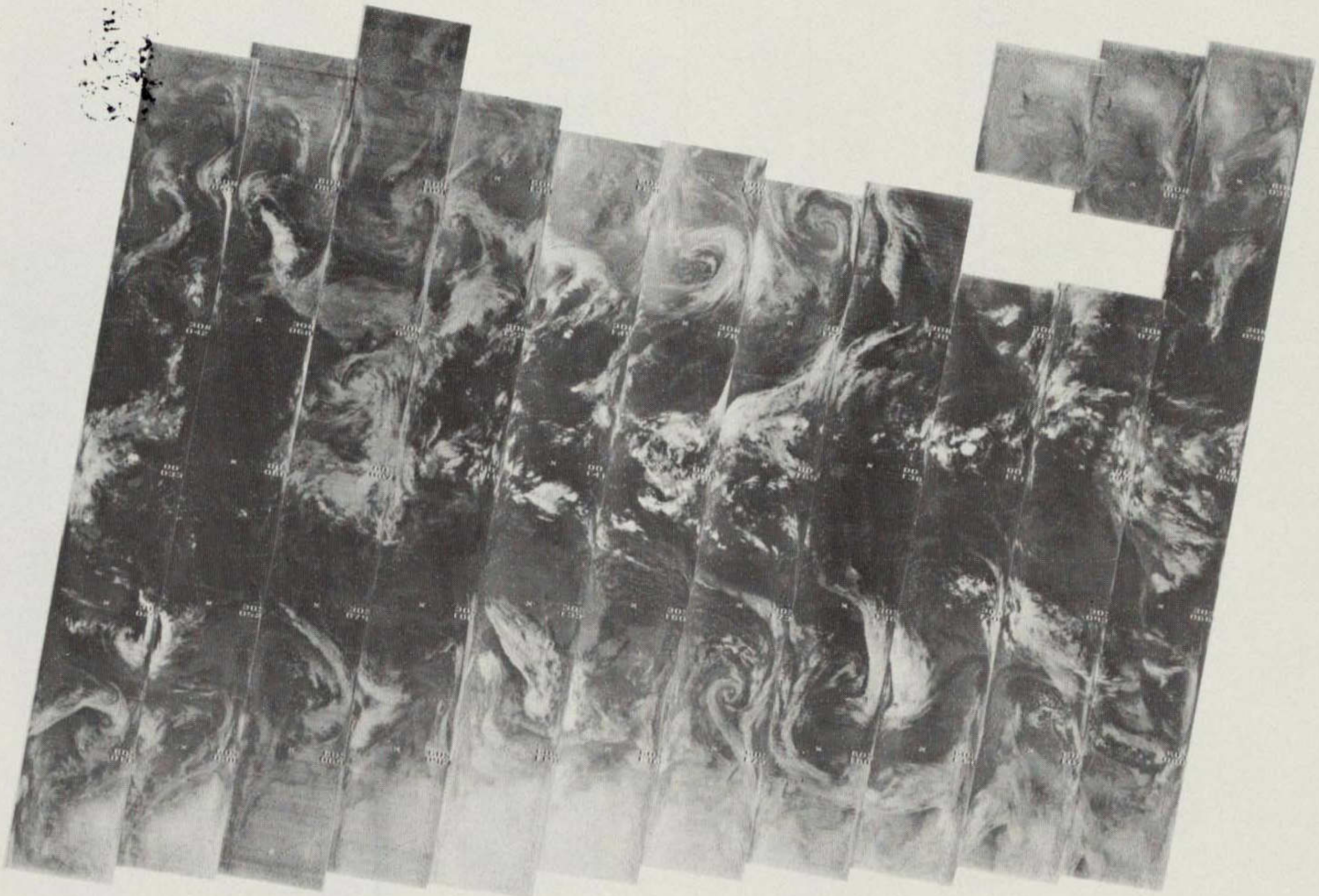


4351 4350 4349 4348 4347 4346 4345 4344 4343 4342 4341 4340 4339

1 MAY 1976

11.5μm

4365 4364 4363 4362 4361 4360 4359 4358 4357 4356 4355 4354 4353 4352

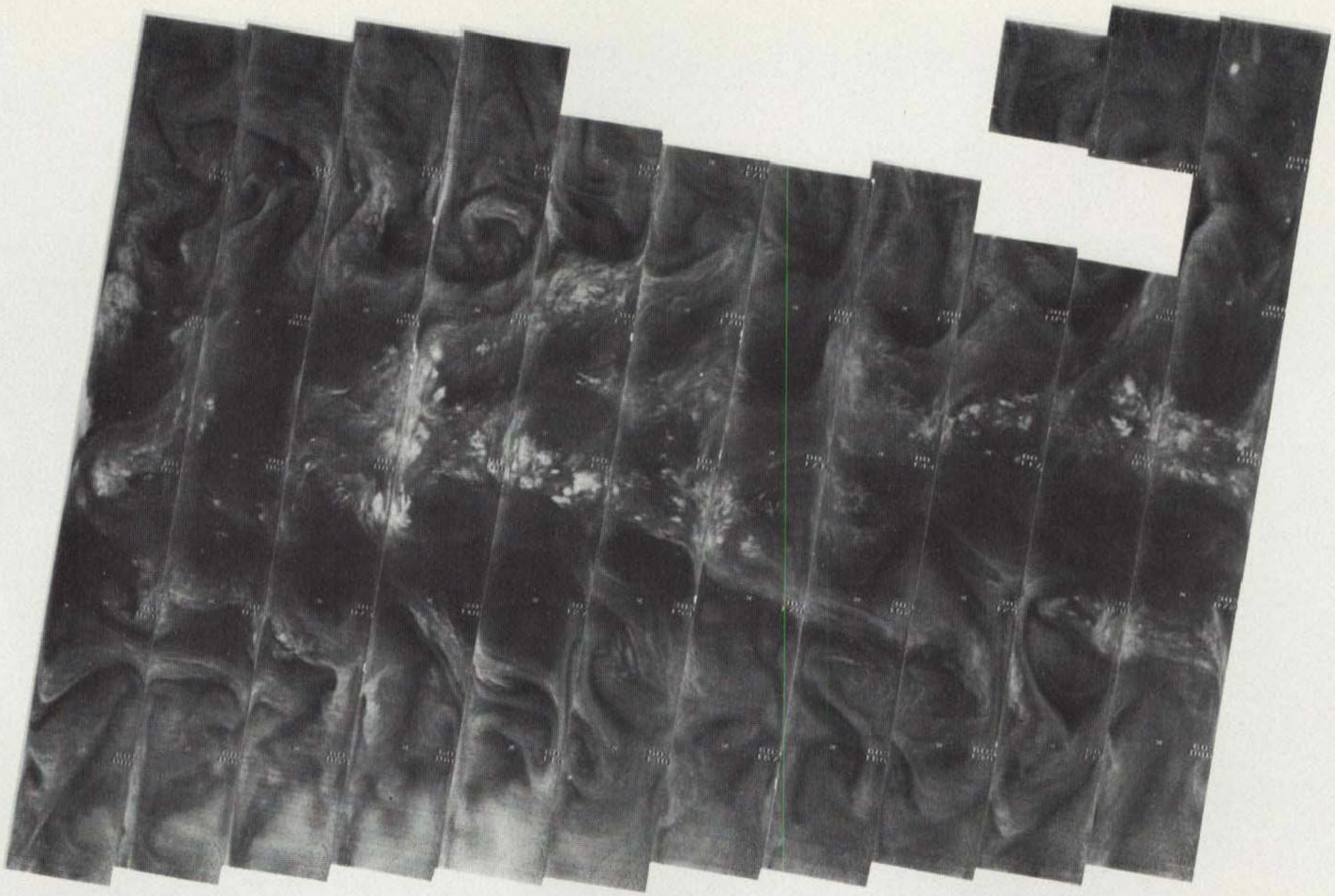
2 MAY 1976

6.7μm

4365 4364 4363 4362 4361 4360 4359 4358 4357 4356 4355 4354 4353 4352

2 MAY 1976

11.5μm



4378 4377 4376 4375 4374 4373 4372 4371 4370 4369 4368 4367 4366

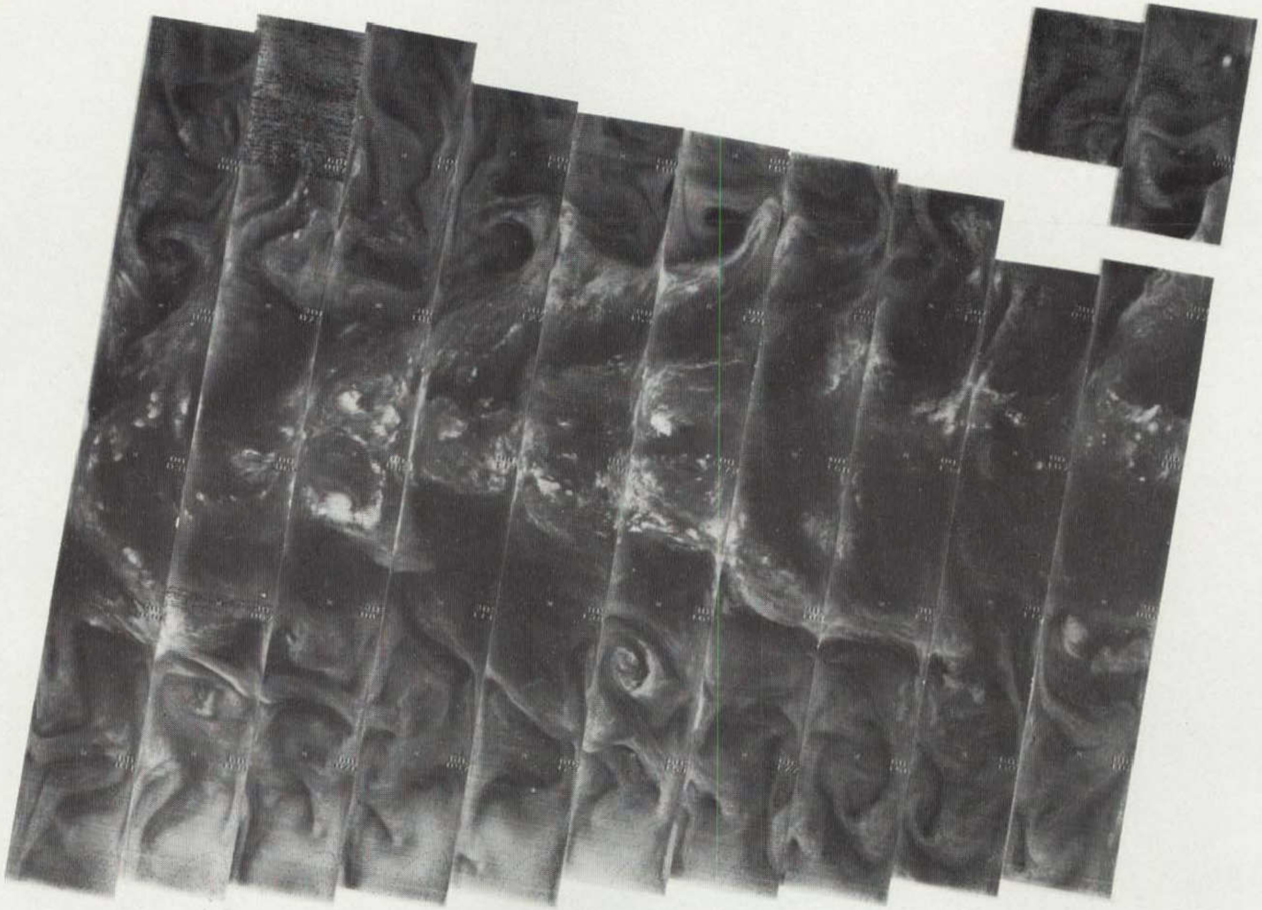
3 MAY 1976

6.7μm

4378 4377 4376 4375 4374 4373 4372 4371 4370 4369 4368 4367 4366

3 MAY 1976

11.5μm



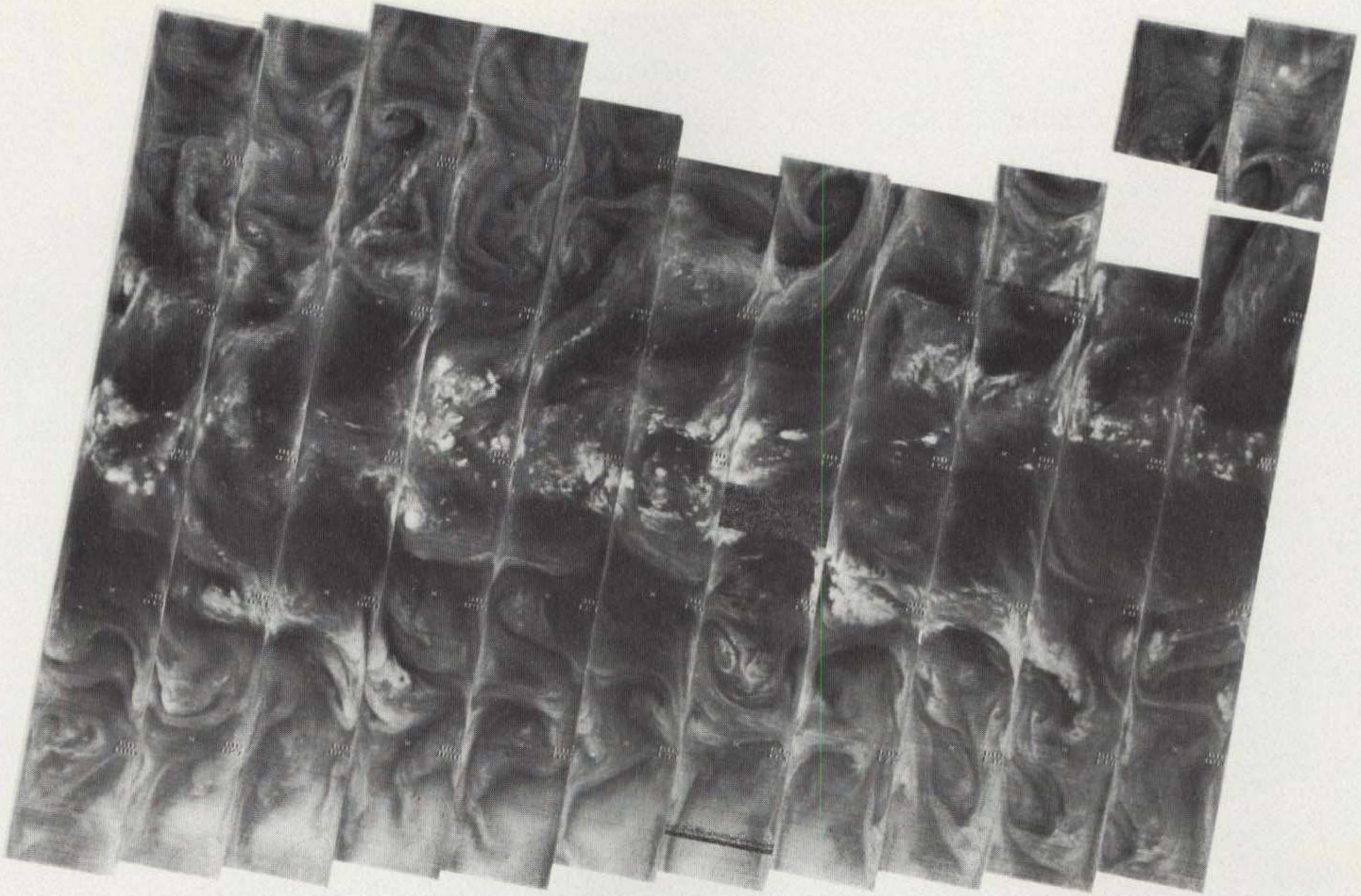
4392 4391 4390 4389 4388 4387 4386 4385 4384 4383 4382 4381 4380 4379

4 MAY 1976

6.7μm

4 MAY 1976

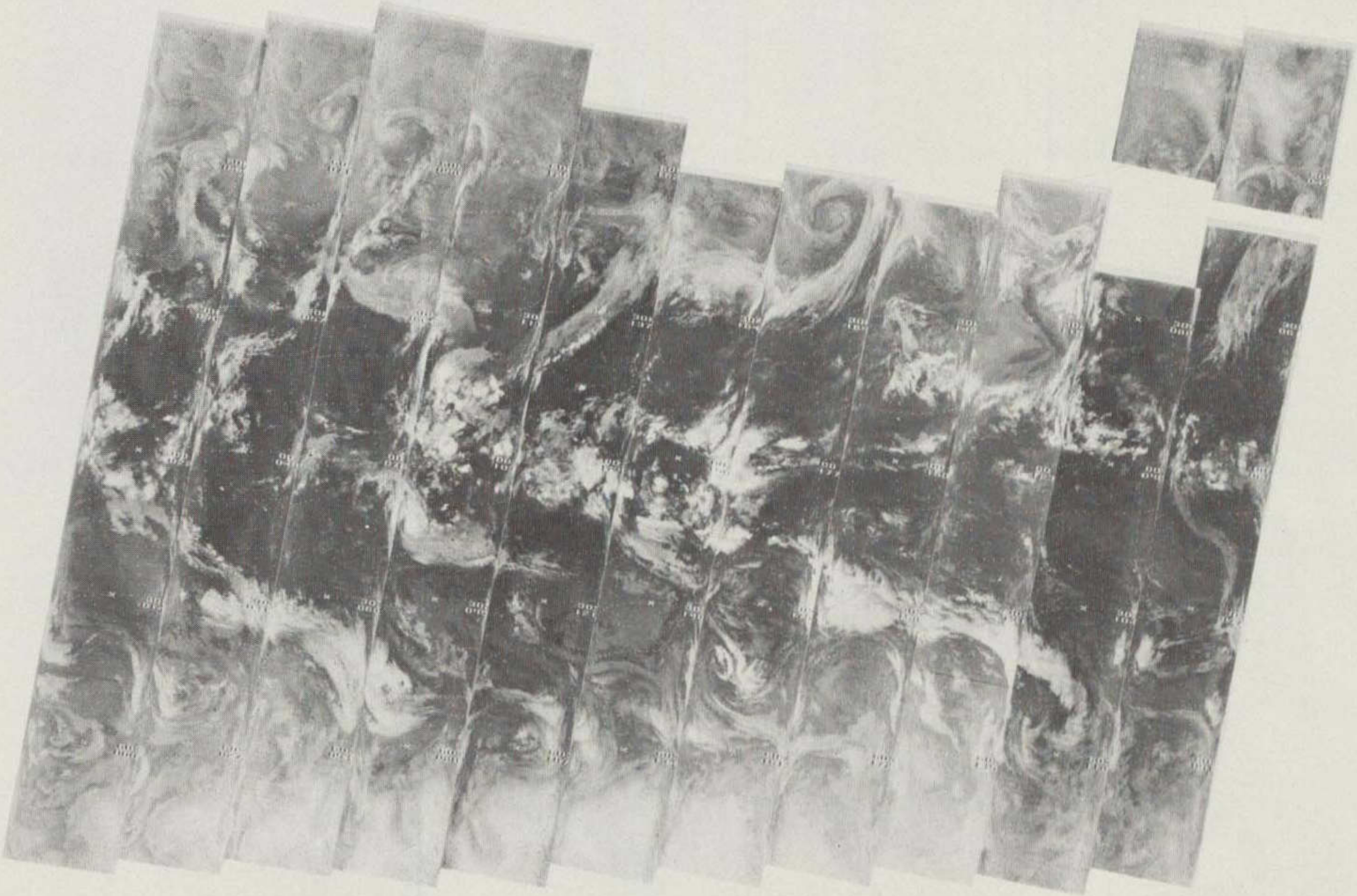
11.5μm



4405 4404 4403 4402 4401 4400 4399 4398 4397 4396 4395 4394 4393

5 MAY 1976

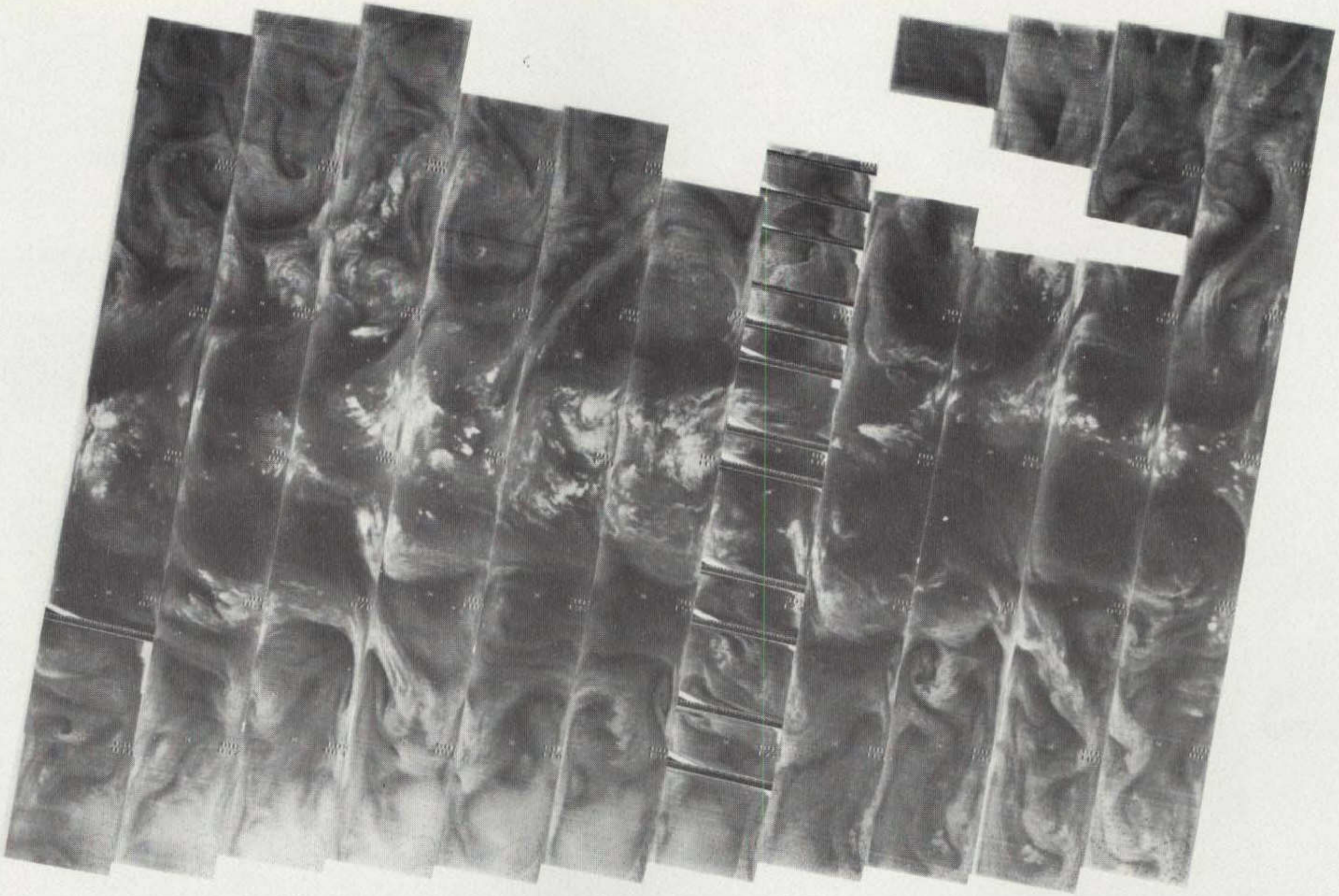
6.7μm



4405 4404 4403 4402 4401 4400 4399 4398 4397 4396 4395 4394 4393

5 MAY 1976

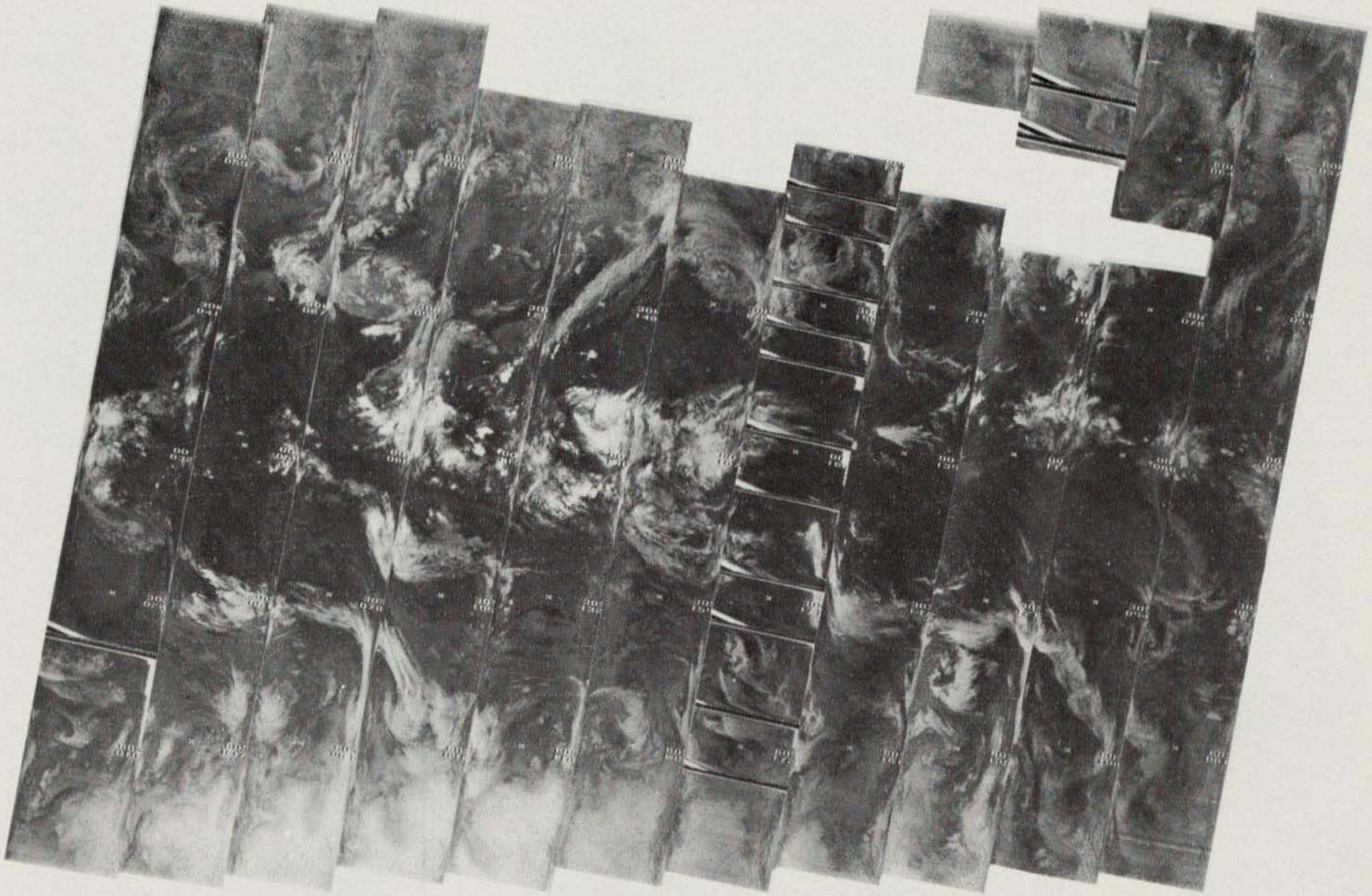
11.5μm



4418 4417 4416 4415 4414 4413 4412 4411 4410 4409 4408 4407 4406

6 MAY 1976

6.7μm

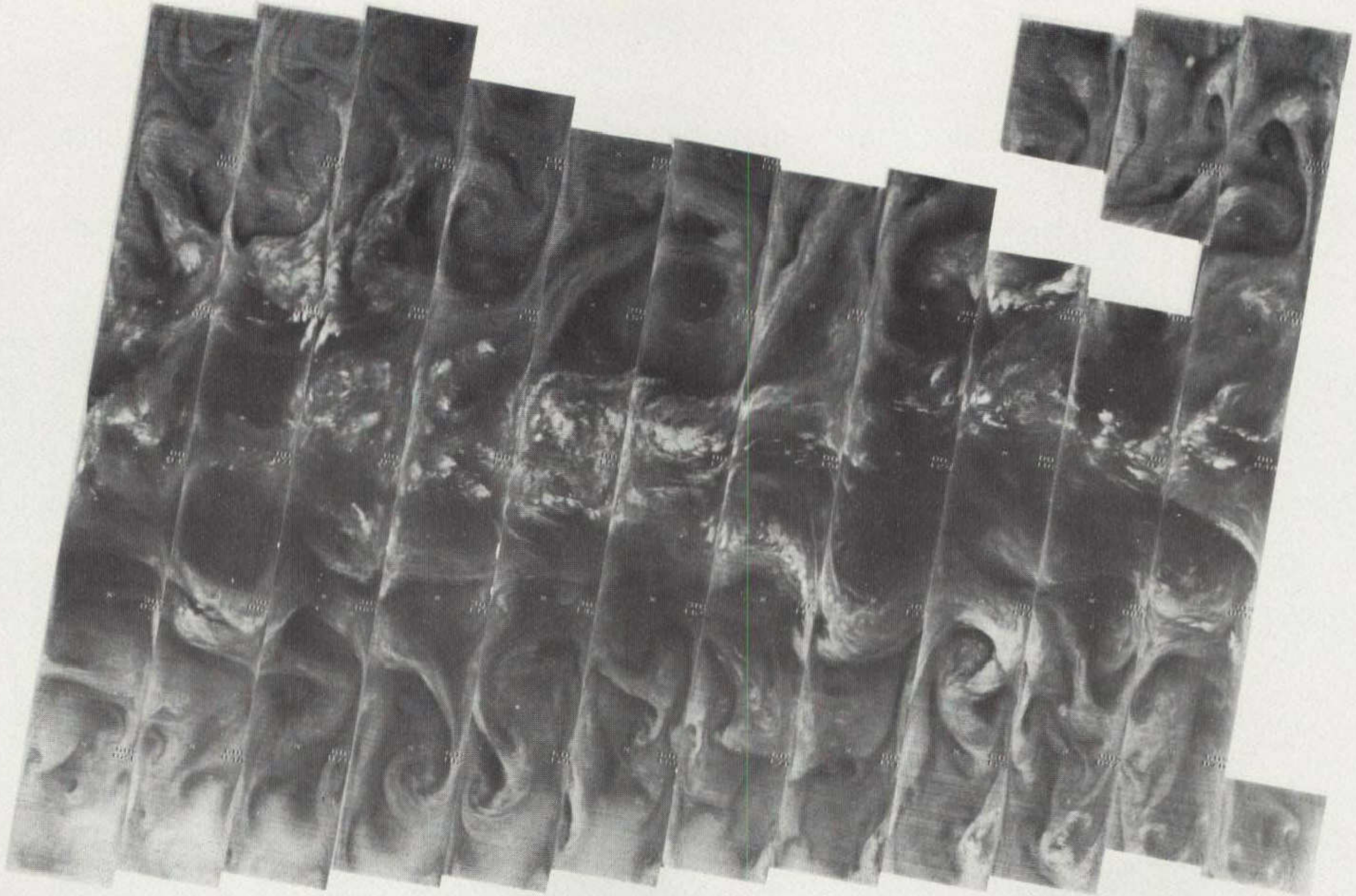


4418 4417 4416 4415 4414 4413 4412 4411 4410 4409 4408 4407 4406

6 MAY 1976

11.5μm

C-2



4432 4431 4430 4429 4428 4427 4426 4425 4424 4423 4422 4421 4420 4419

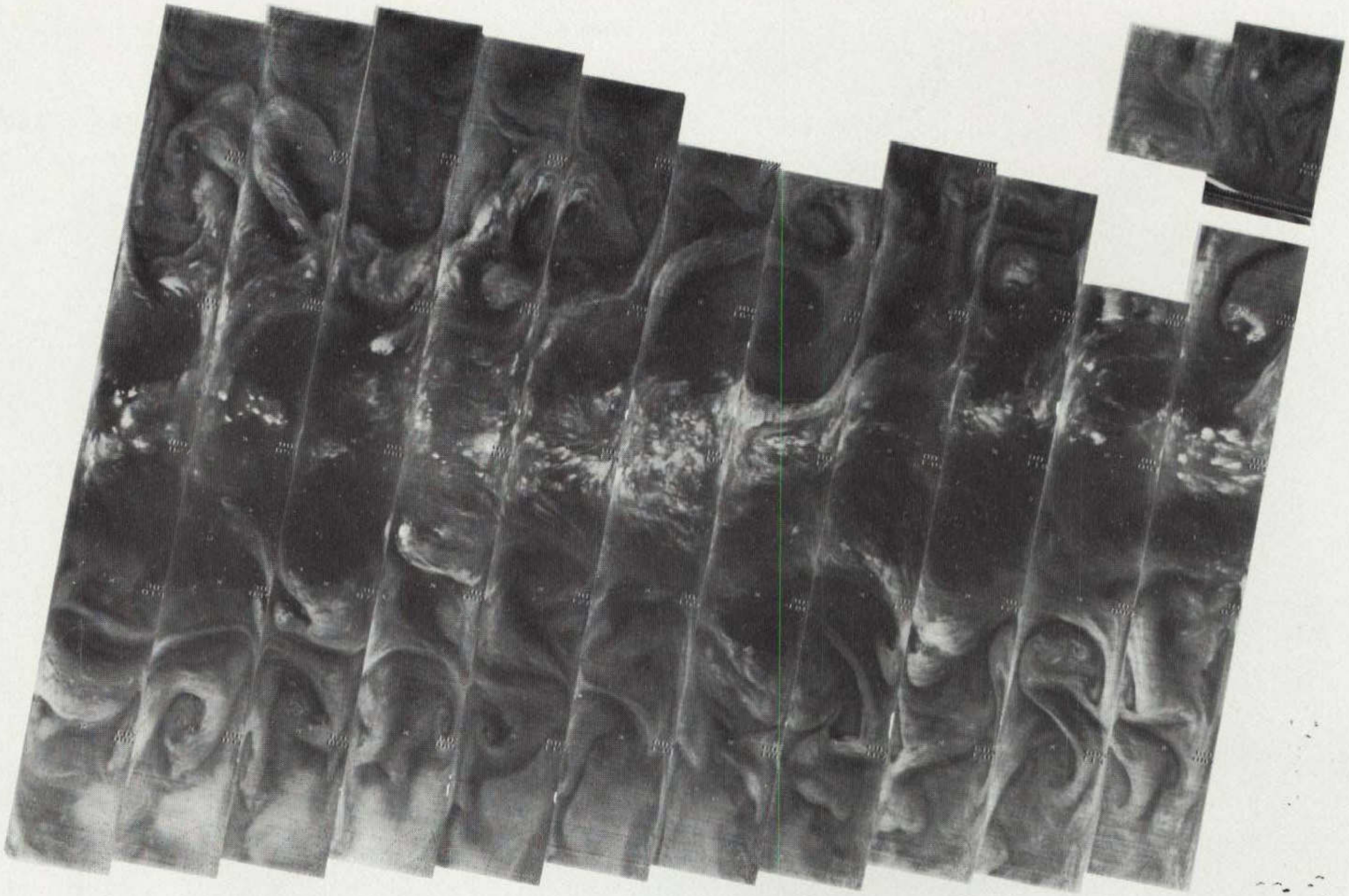
7 MAY 1976

6.7μm

4432 4431 4430 4429 4428 4427 4426 4425 4424 4423 4422 4421 4420 4419

7 MAY 1976

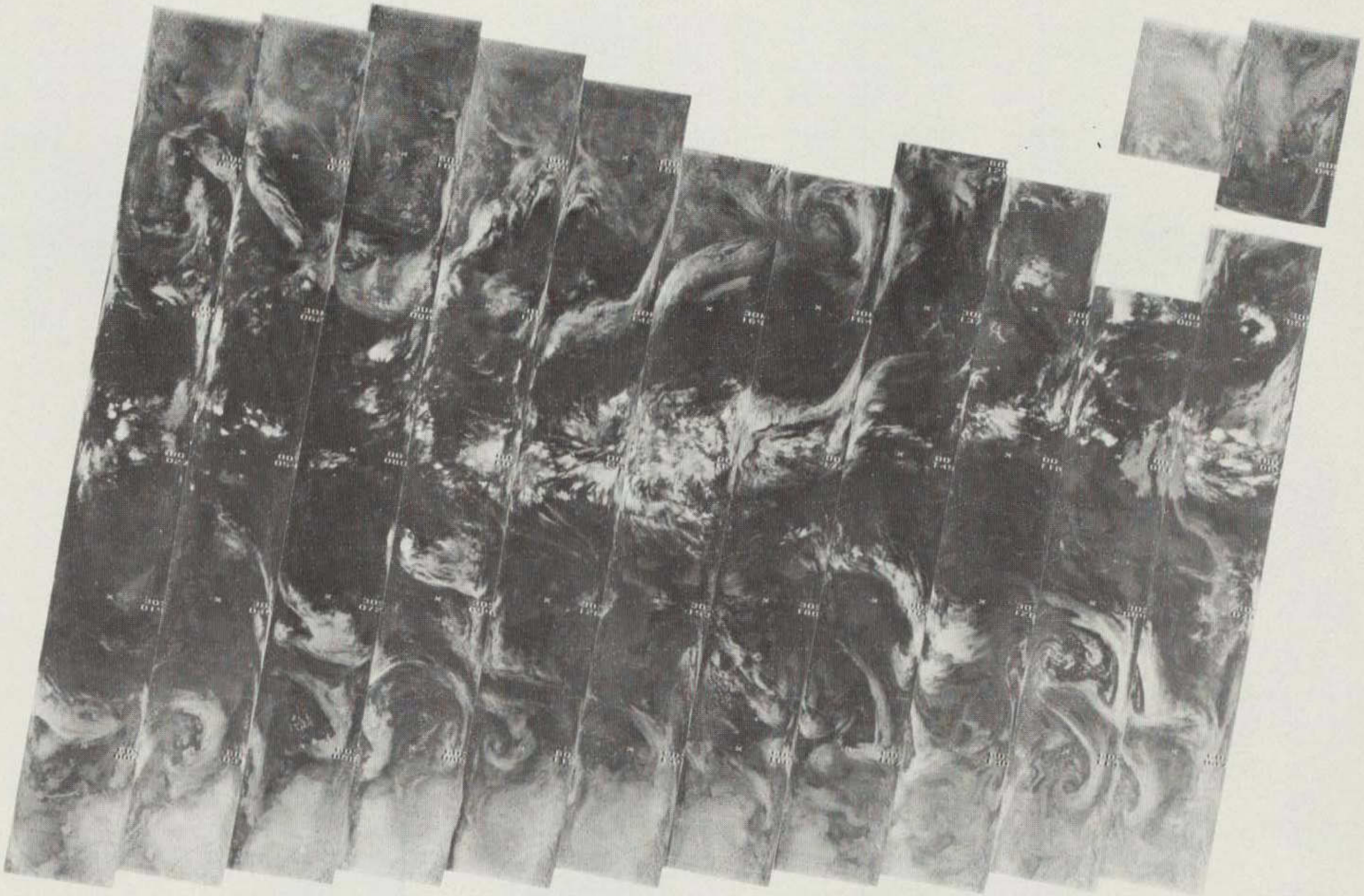
11.5μm



4445 4444 4443 4442 4441 4440 4439 4438 4437 4436 4435 4434 4433

8 MAY 1976

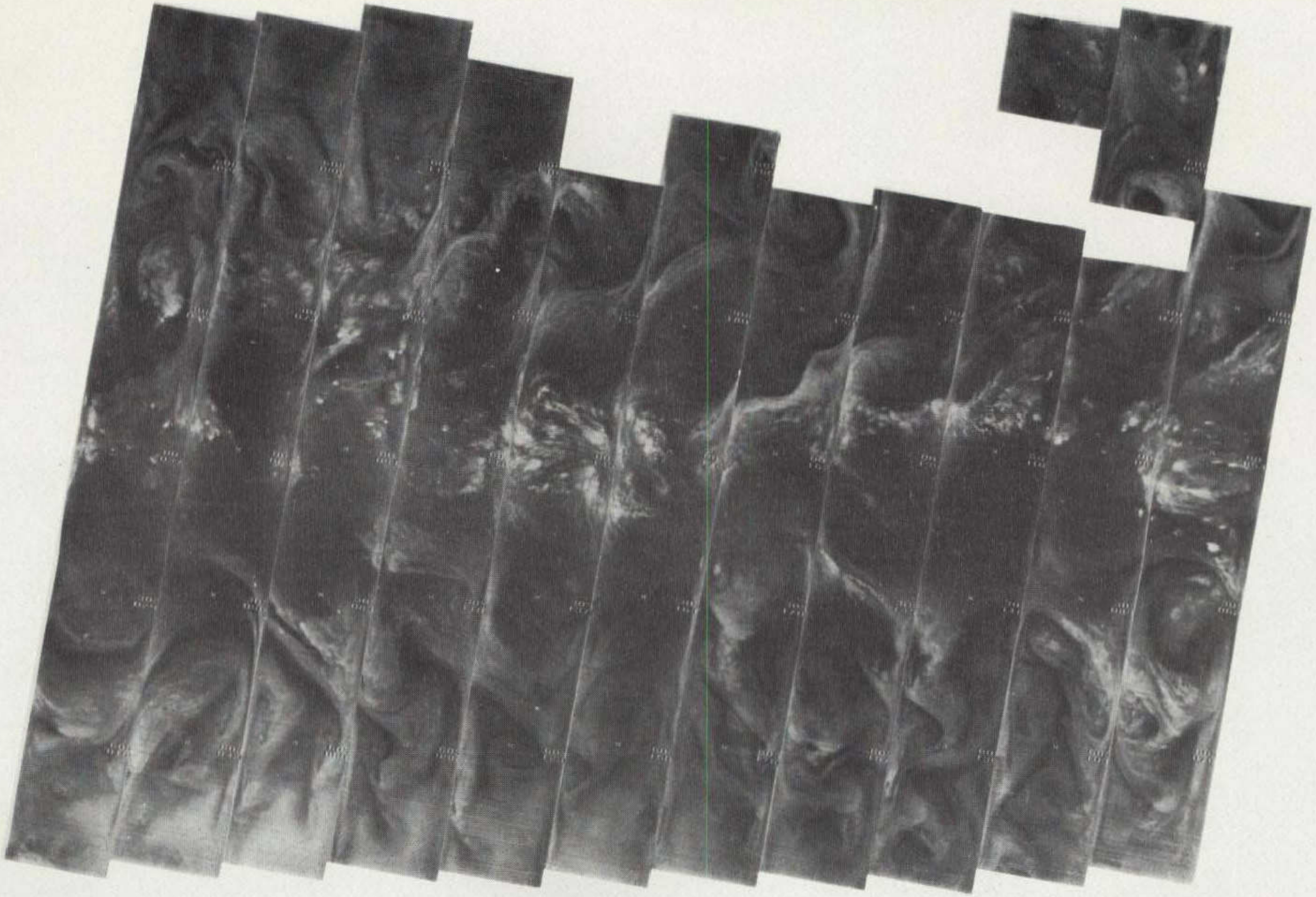
6.7μm



4445 4444 4443 4442 4441 4440 4439 4438 4437 4436 4435 4434 4433

8 MAY 1976

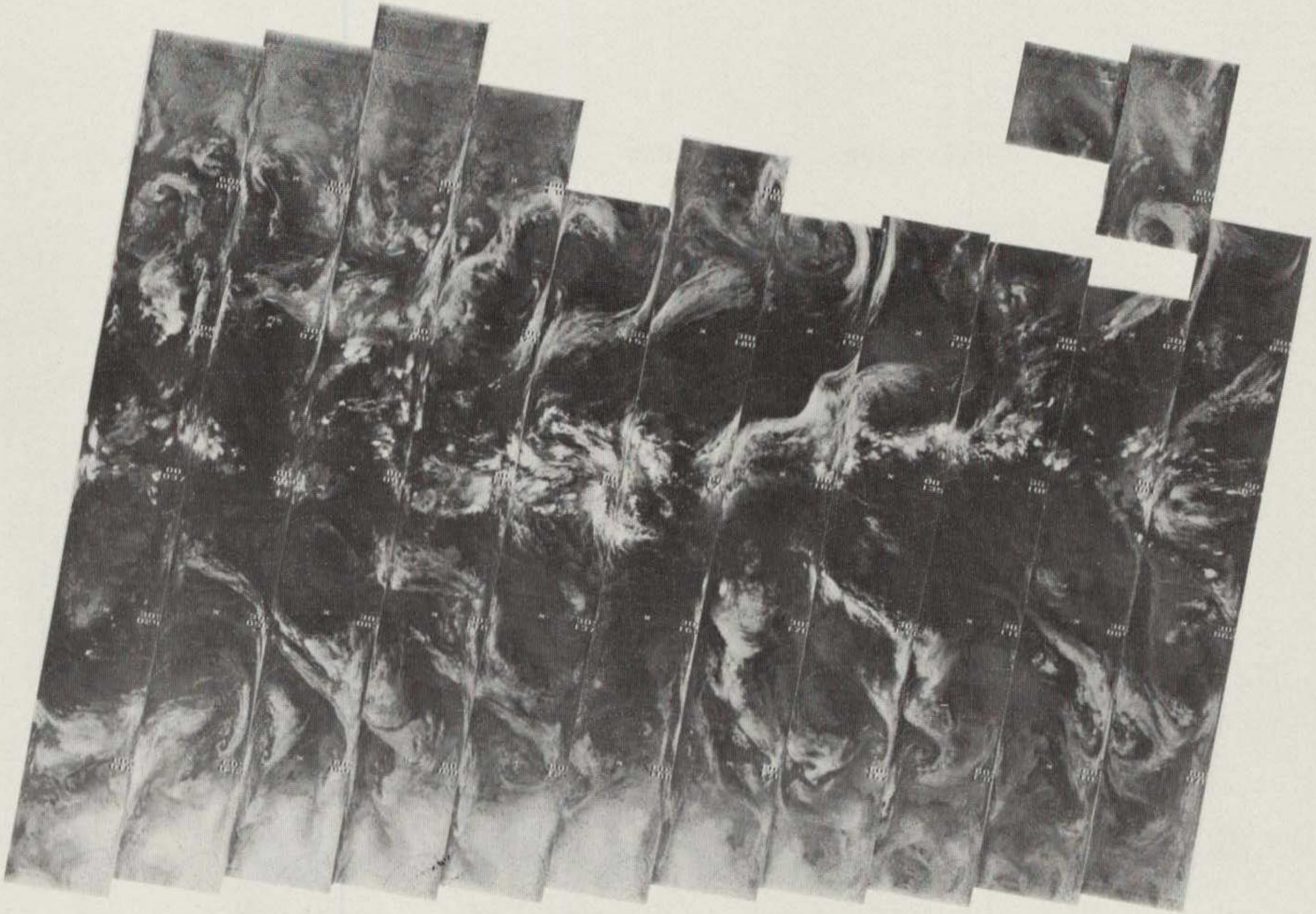
11.5μm



4459 4458 4457 4456 4455 4454 4453 4452 4451 4450 4449 4448 4447 4446

9 MAY 1976

6.7μm



4459 4458 4457 4456 4455 4454 4453 4452 4451 4450 4449 4448 4447 4446

9 MAY 1976

11.5μm

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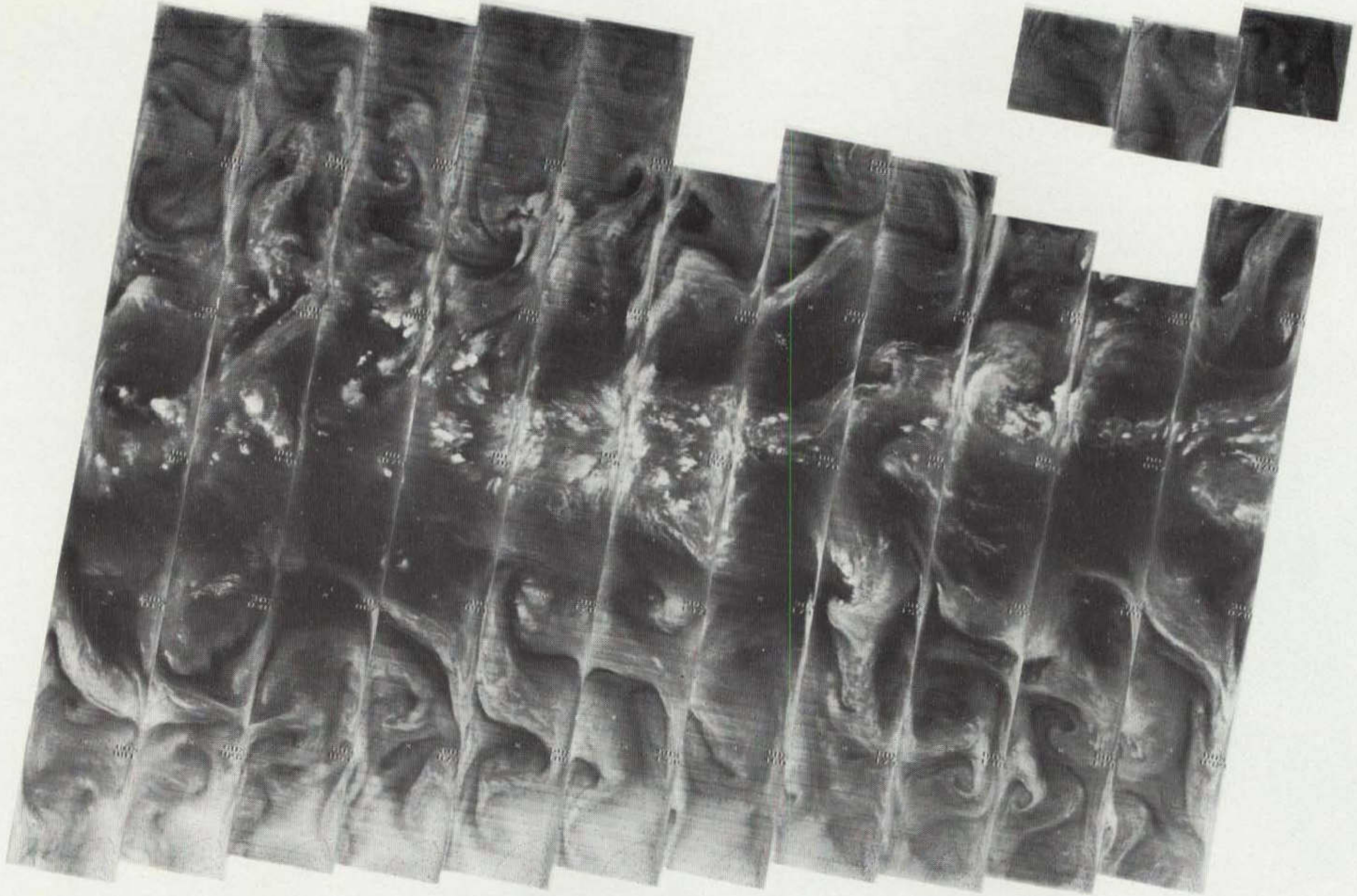
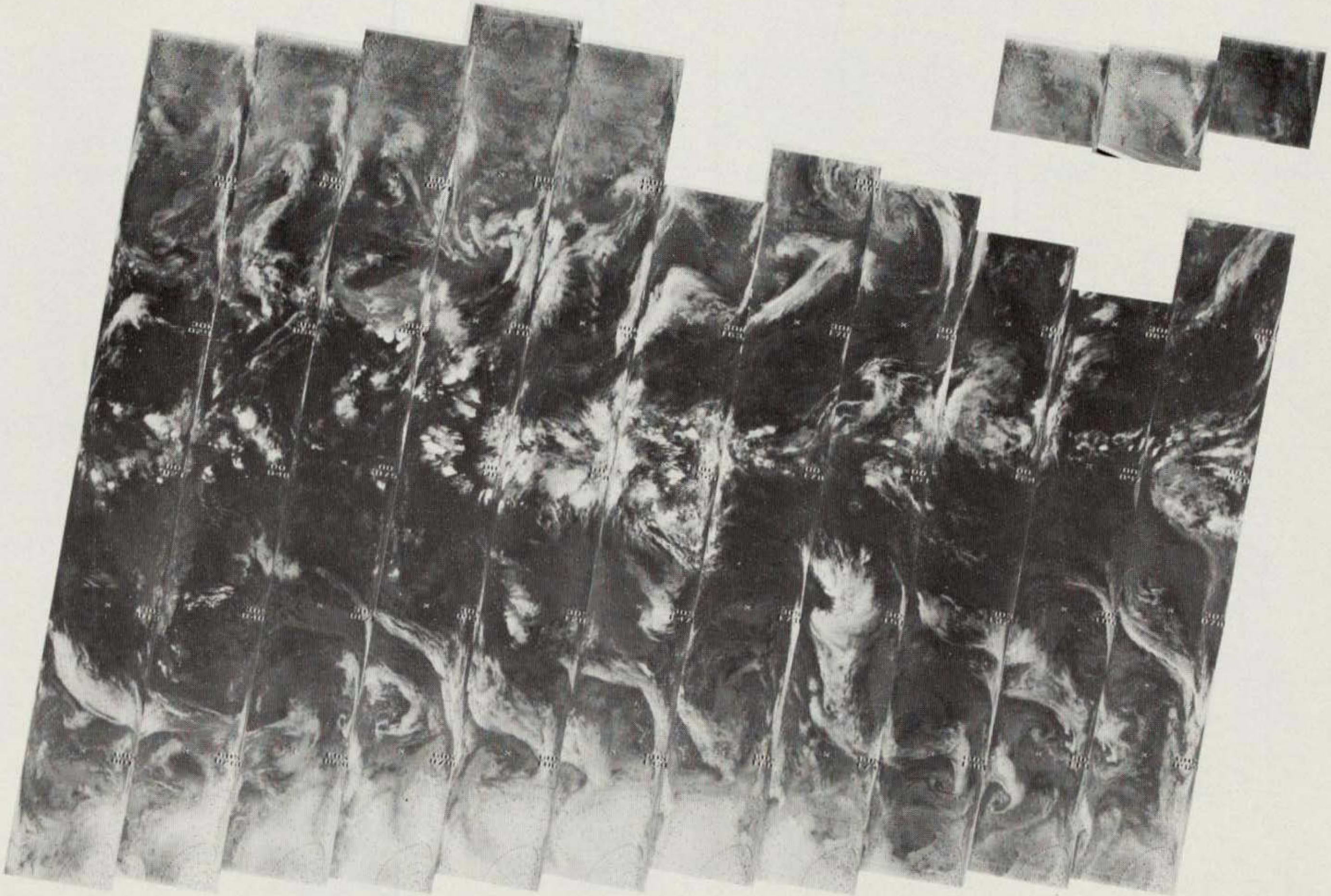


4472 4471 4470 4469 4468 4467 4466 4465 4464 4463 4462 4461 4460

10 MAY 1976

6.7μm



4472 4471 4470 4469 4468 4467 4466 4465 4464 4463 4462 4461 4460

10 MAY 1976

11.5μm

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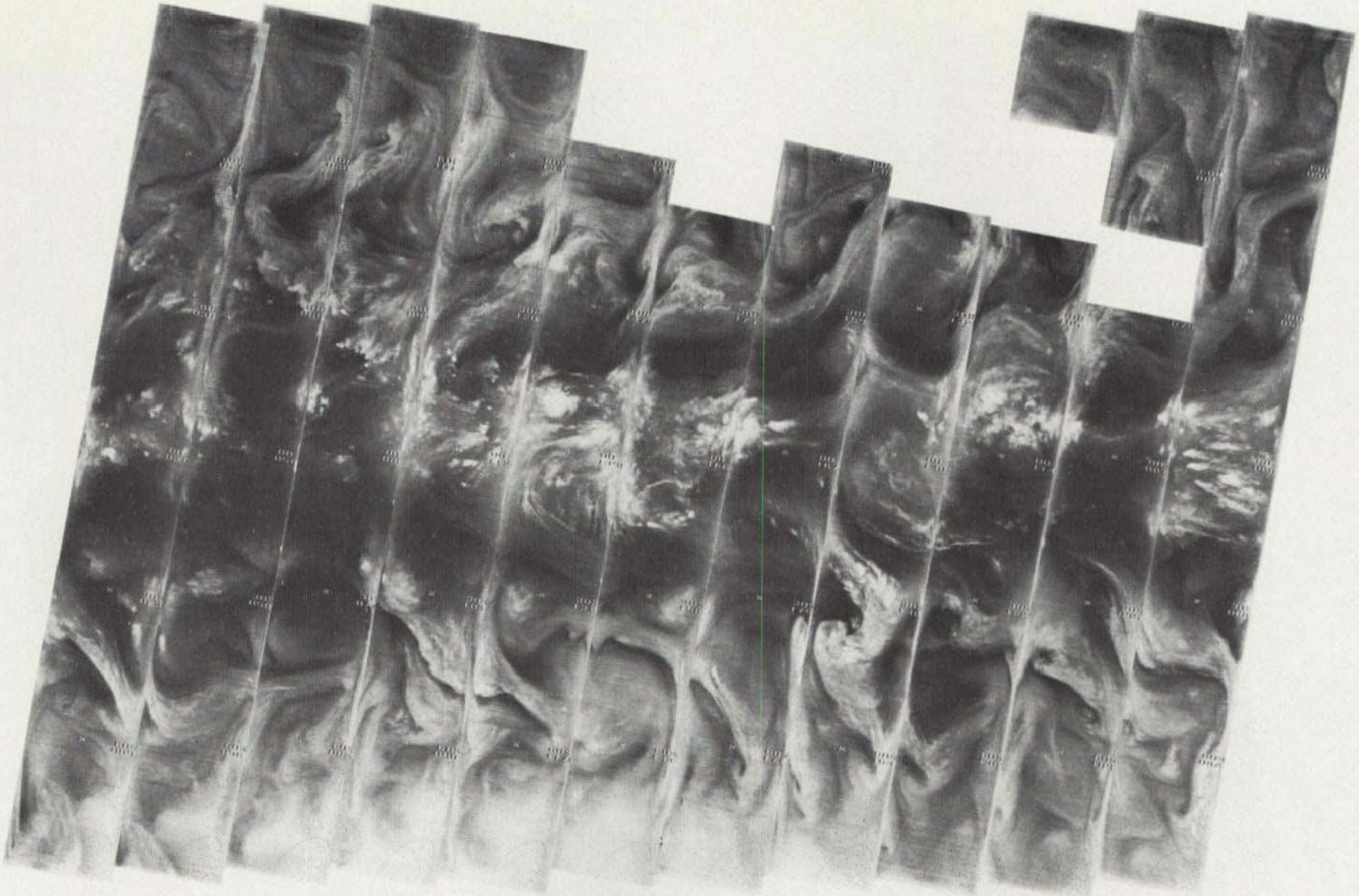
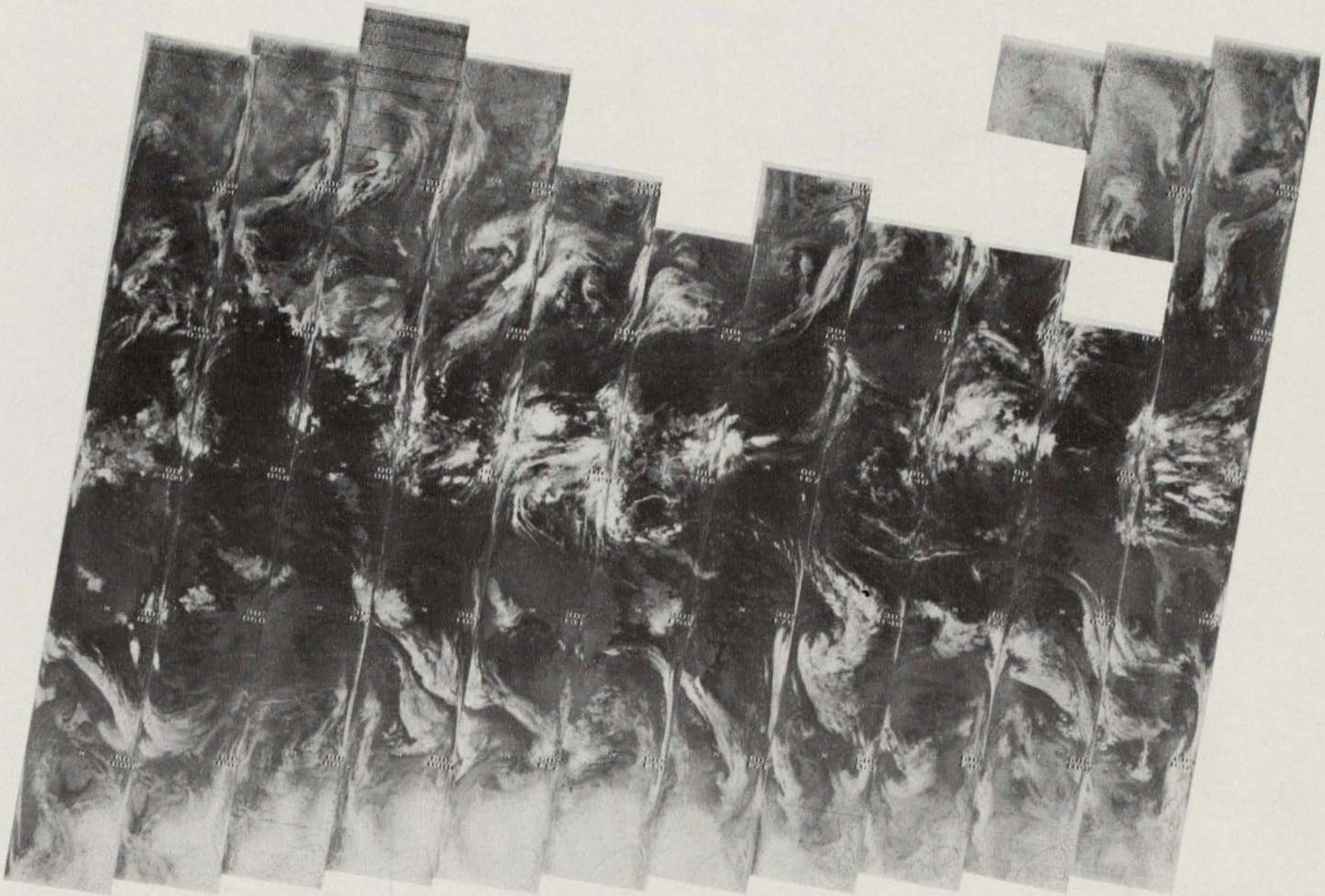


4485 4484 4483 4482 4481 4480 4479 4478 4477 4476 4475 4474 4473

11 MAY 1976

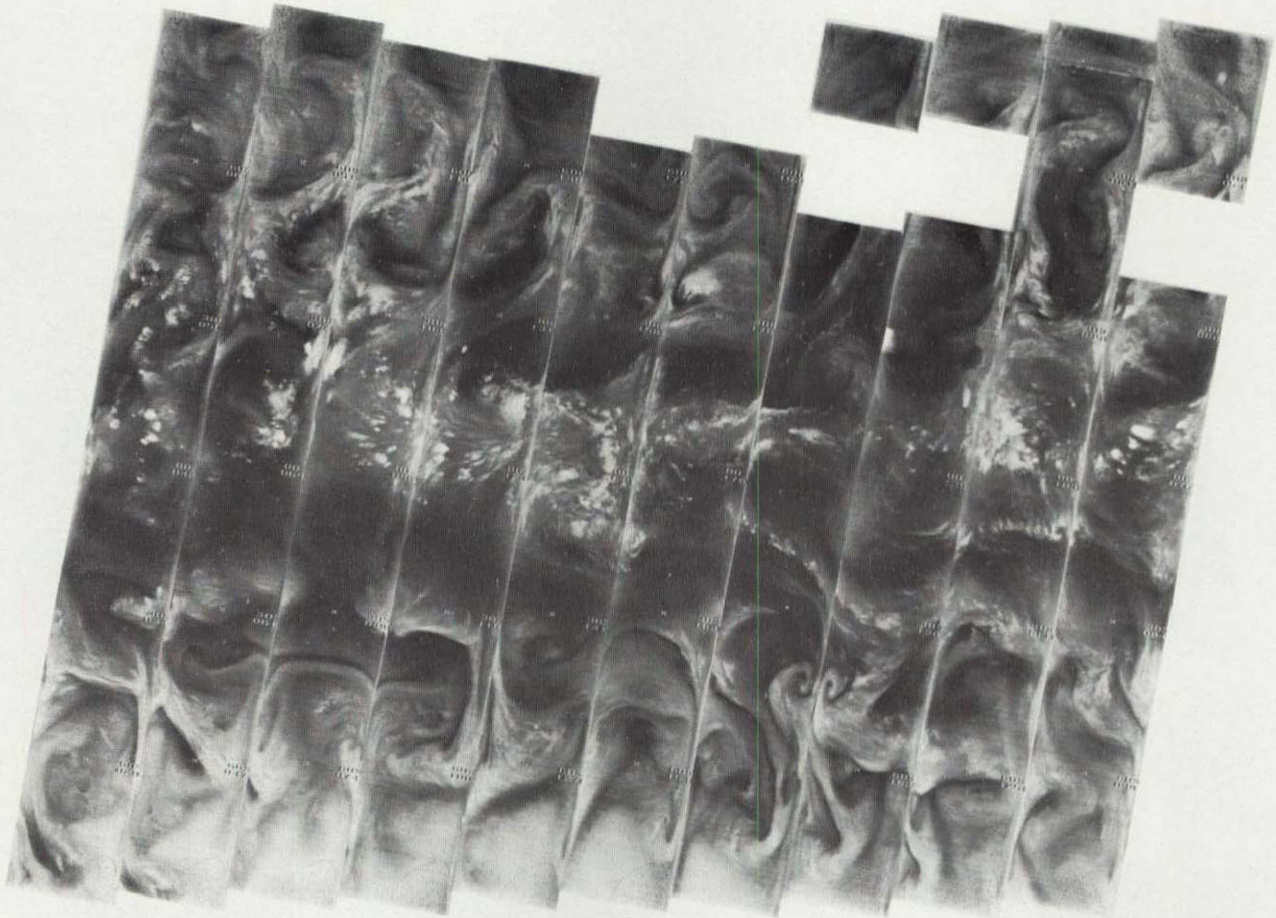
6.7μm



4485 4484 4483 4482 4481 4480 4479 4478 4477 4476 4475 4474 4473

11 MAY 1976

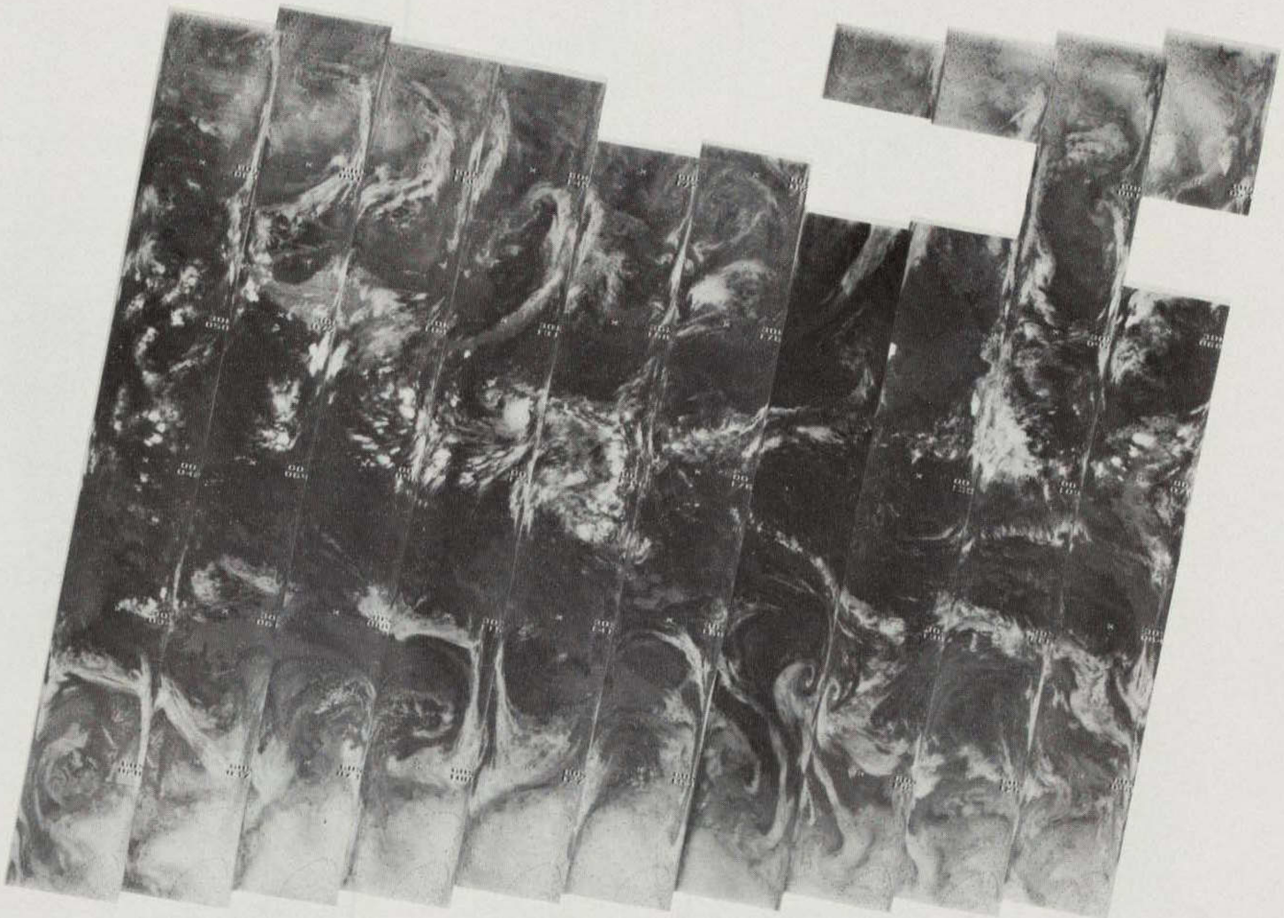
11.5μm



4499 4498 4497 4496 4495 4494 4493 4492 4491 4490 4489 4488 4487 4486

12 MAY 1976

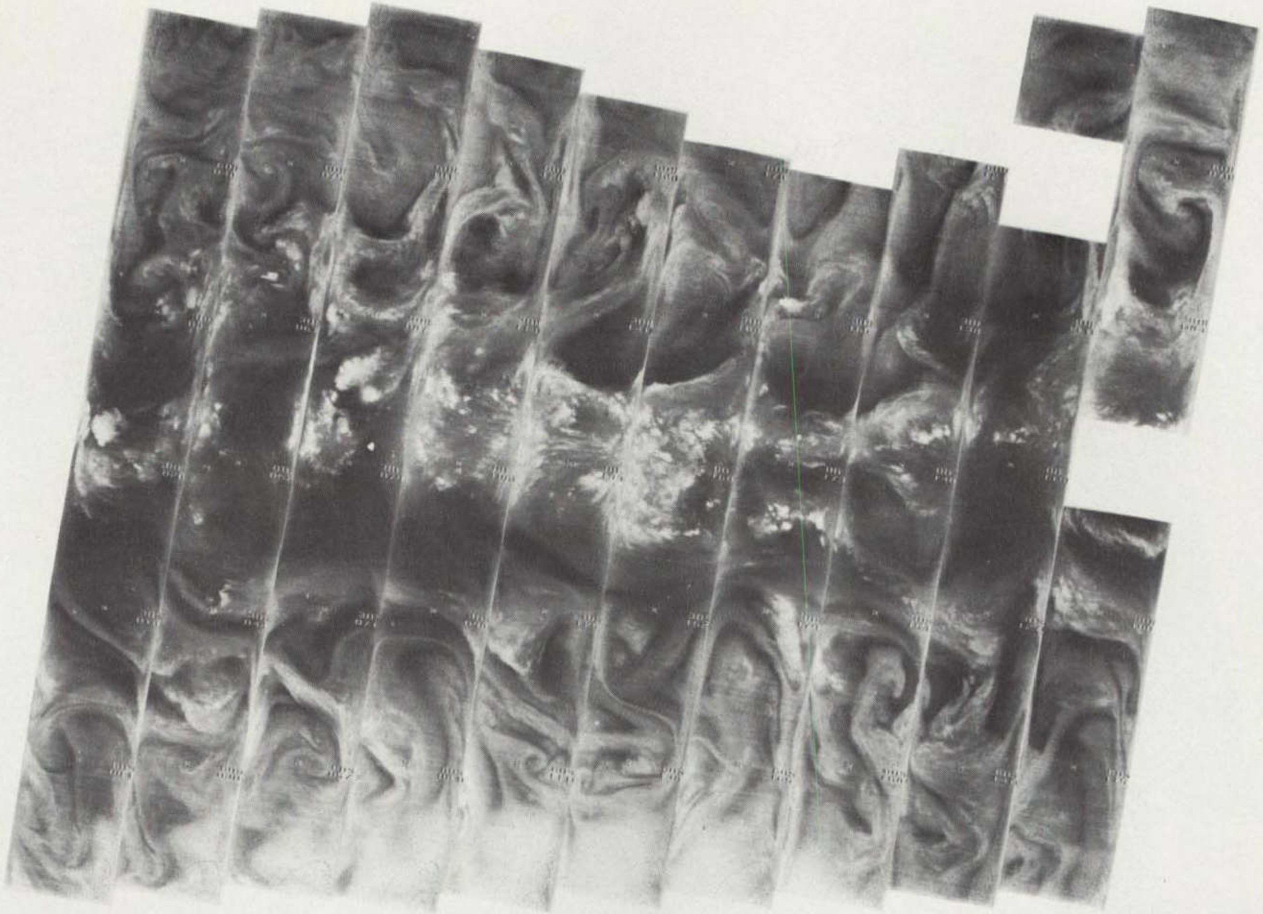
6.7μm



4499 4498 4497 4496 4495 4494 4493 4492 4491 4490 4489 4488 4487 4486.

12 MAY 1976

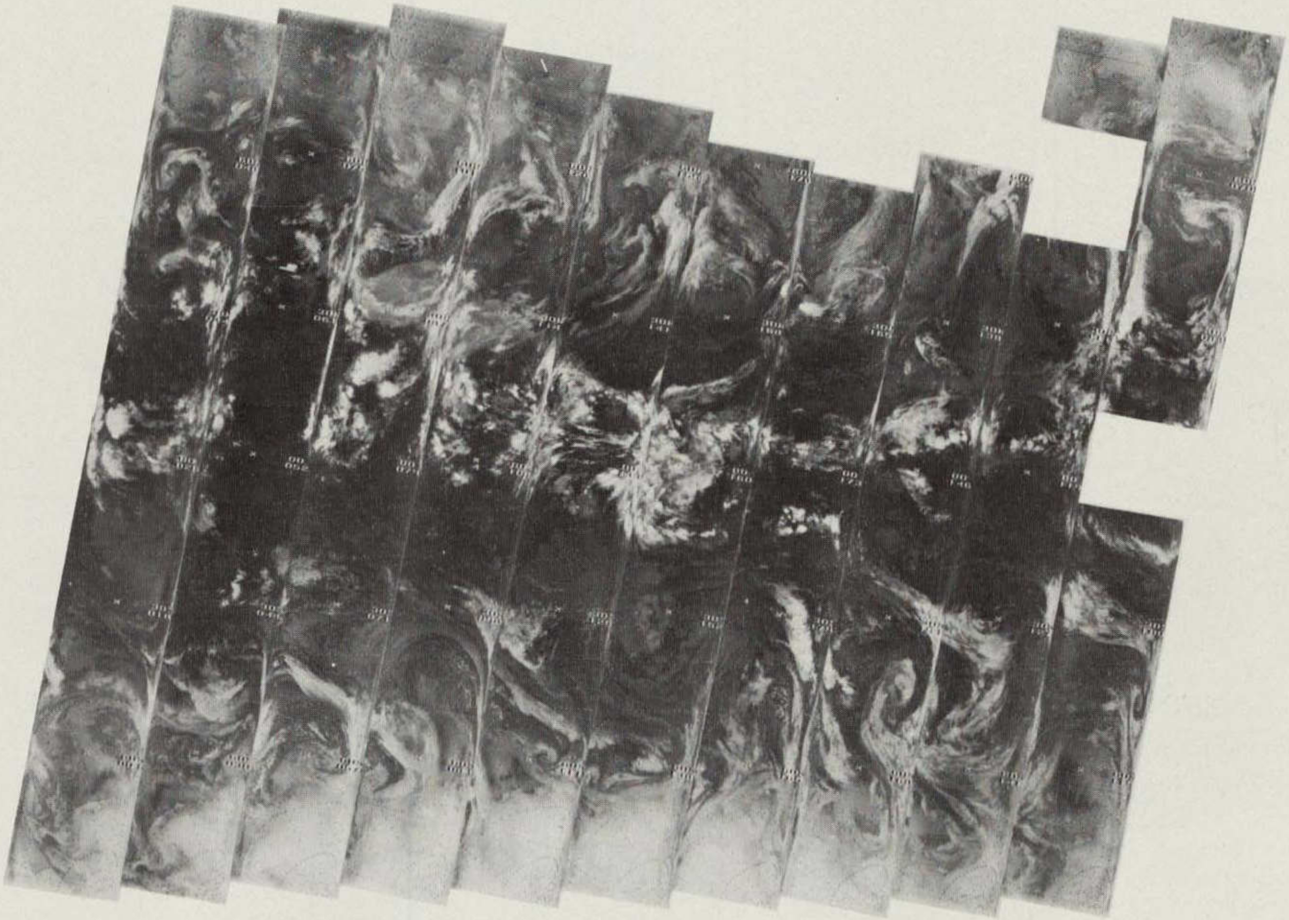
11.5μm



4512 4511 4510 4509 4508 4507 4506 4505 4504 4503 4502 4501 4500

13 MAY 1976

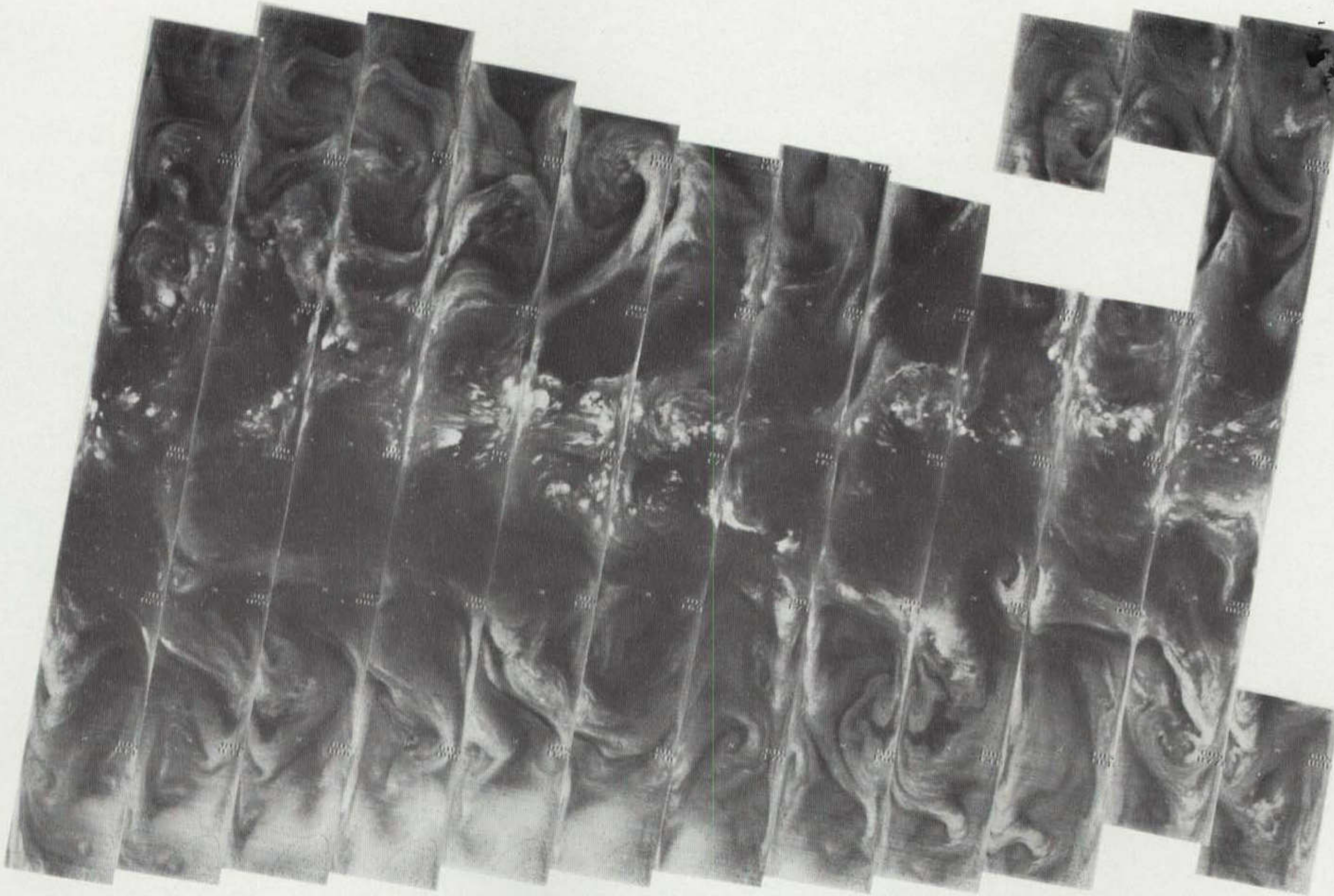
6.7μm



4512 4511 4510 4509 4508 4507 4506 4505 4504 4503 4502 4501 4500

13 MAY 1976

11.5μm



4526 4525 4524 4523 4522 4521 4520 4519 4518 4517 4516 4515 4514 4513

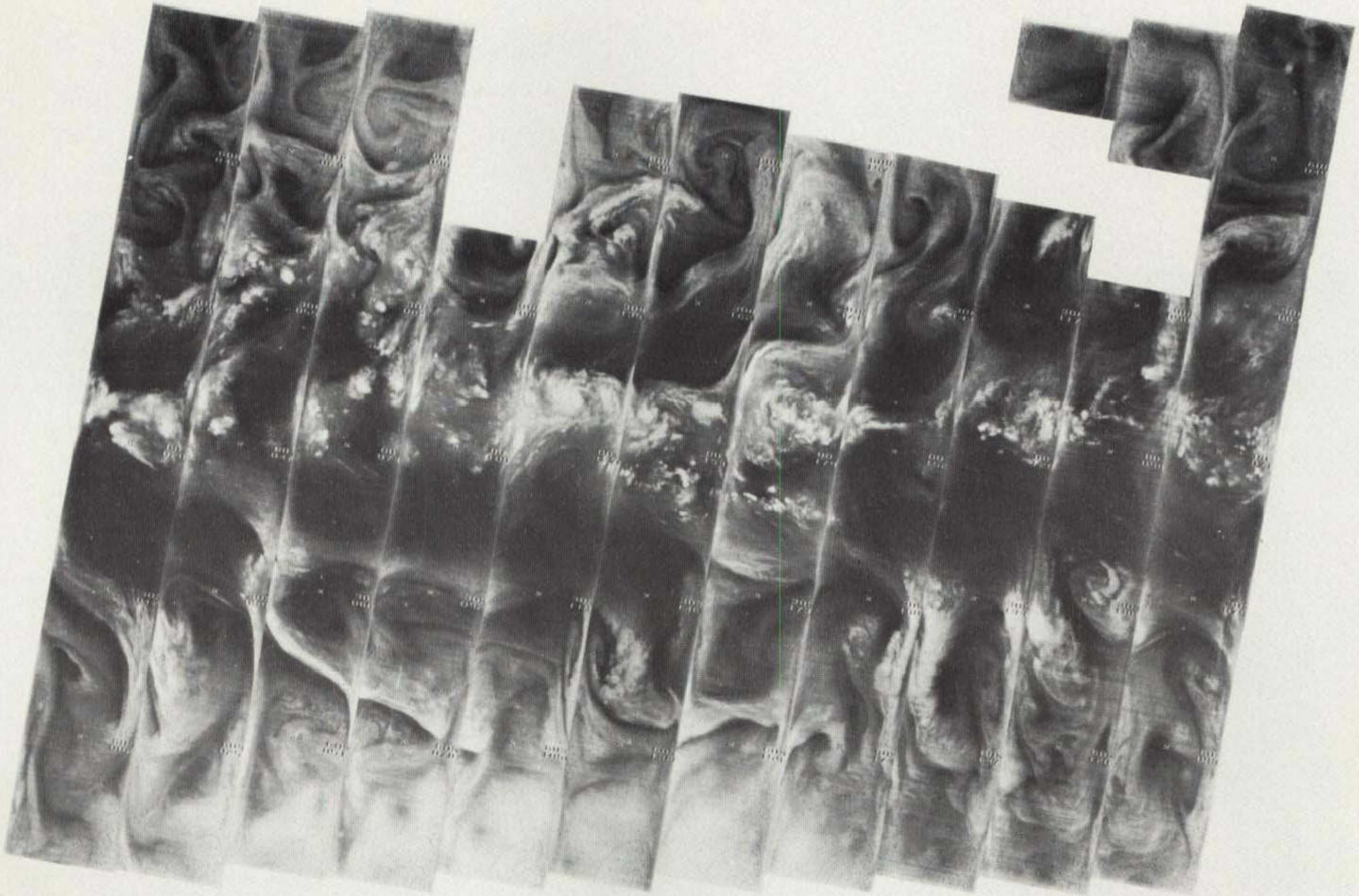
14 MAY 1976

6.7μm

4526 4525 4524 4523 4522 4521 4520 4519 4518 4517 4516 4515 4514 4513

14 MAY 1976

11.5μm



4539 4538 4537 4536 4535 4534 4533 4532 4531 4530 4529 4528 4527

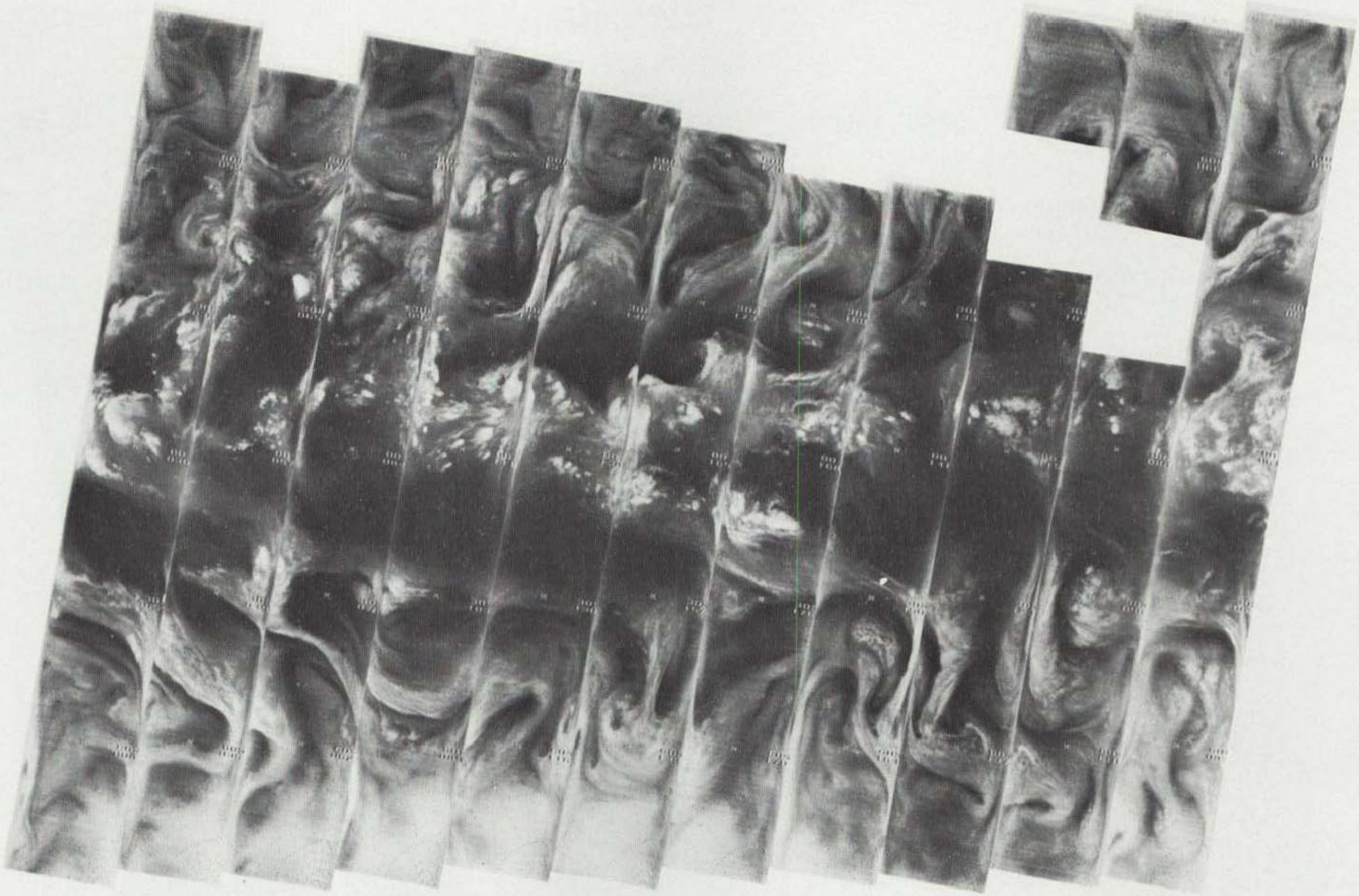
15 MAY 1976

6.7μm

4539 4538 4537 4536 4535 4534 4533 4532 4531 4530 4529 4528 4527

15 MAY 1976

11.5μm



4552 4551 4550 4549 4548 4547 4546 4545 4544 4543 4542 4541 4540

16 MAY 1976

6.7μm

4552 4551 4550 4549 4548 4547 4546 4545 4544 4543 4542 4541 4540

16 MAY 1976

11.5μm

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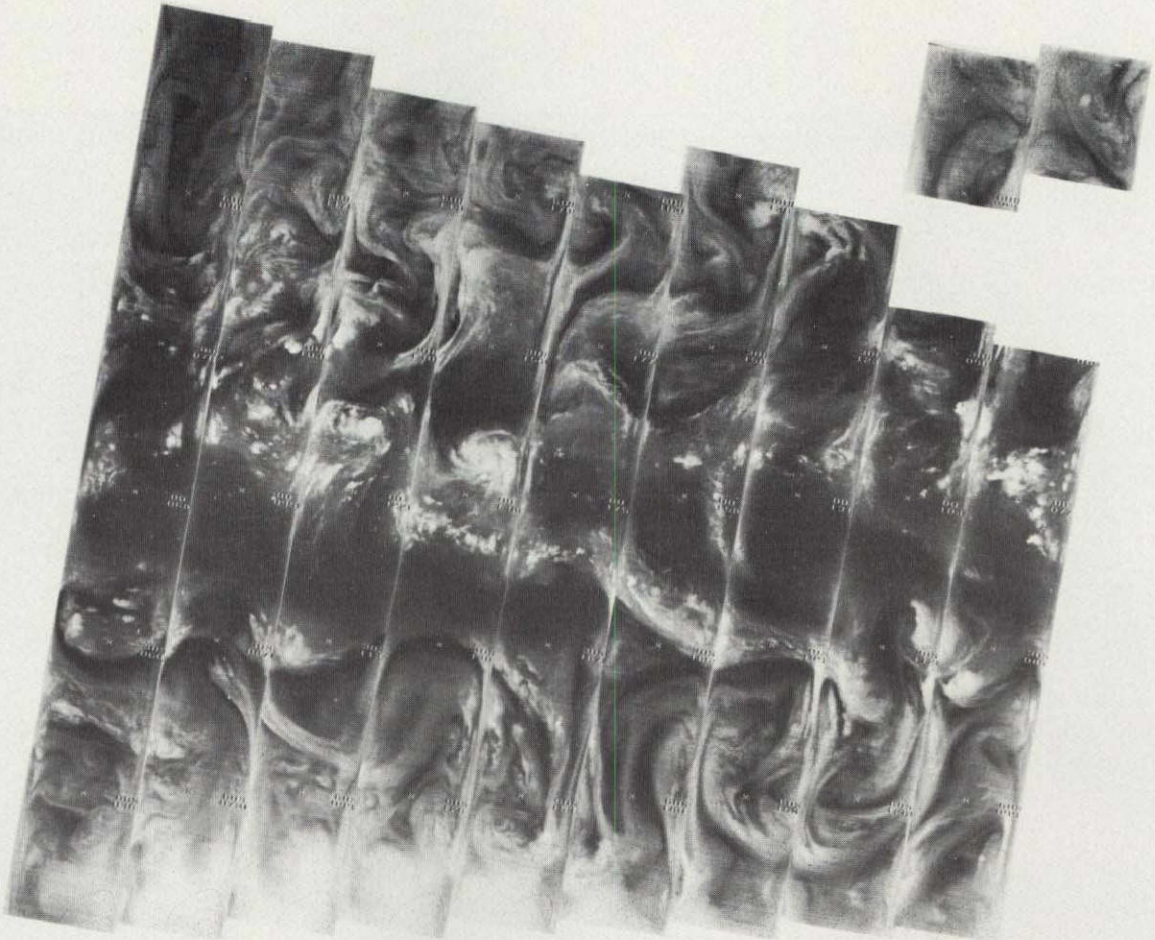


4566 4565 4564 4563 4562 4561 4560 4559 4558 4557 4556 4555 4554 4553

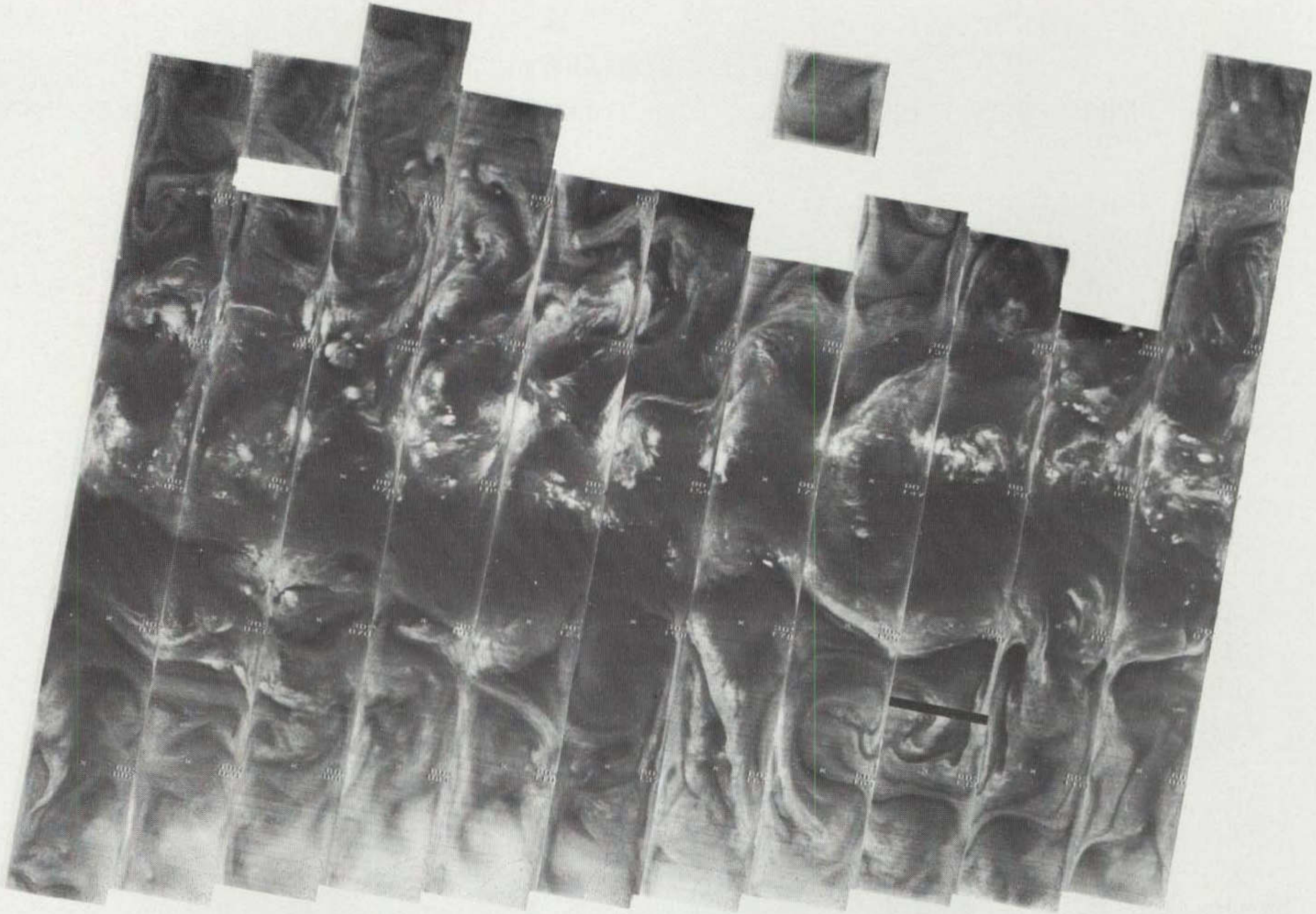
17 MAY 1976

6.7μm

4566 4565 4564 4563 4562 4561 4560 4559 4558 4557 4556 4555 4554 4553

17 MAY 1976

11.5μm



4579 4578 4577 4576 4575 4574 4573 4572 4571 4570 4569 4568 4567

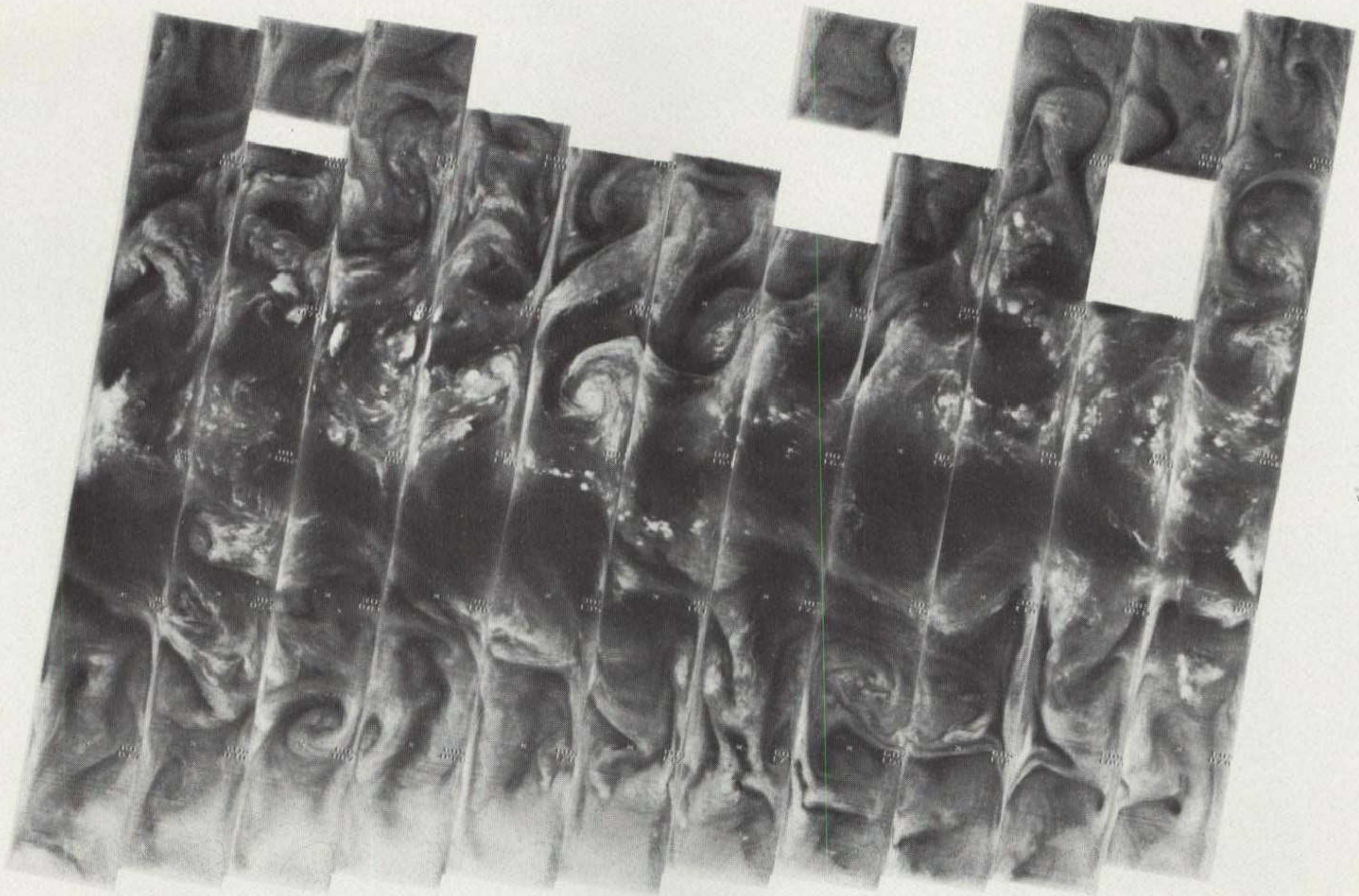
18 MAY 1976

6.7μm

4579 4578 4577 4576 4575 4574 4573 4572 4571 4570 4569 4568 4567

18 MAY 1976

11.5μm



4592 4591 4590 4589 4588 4587 4586 4585 4584 4583 4582 4581 4580

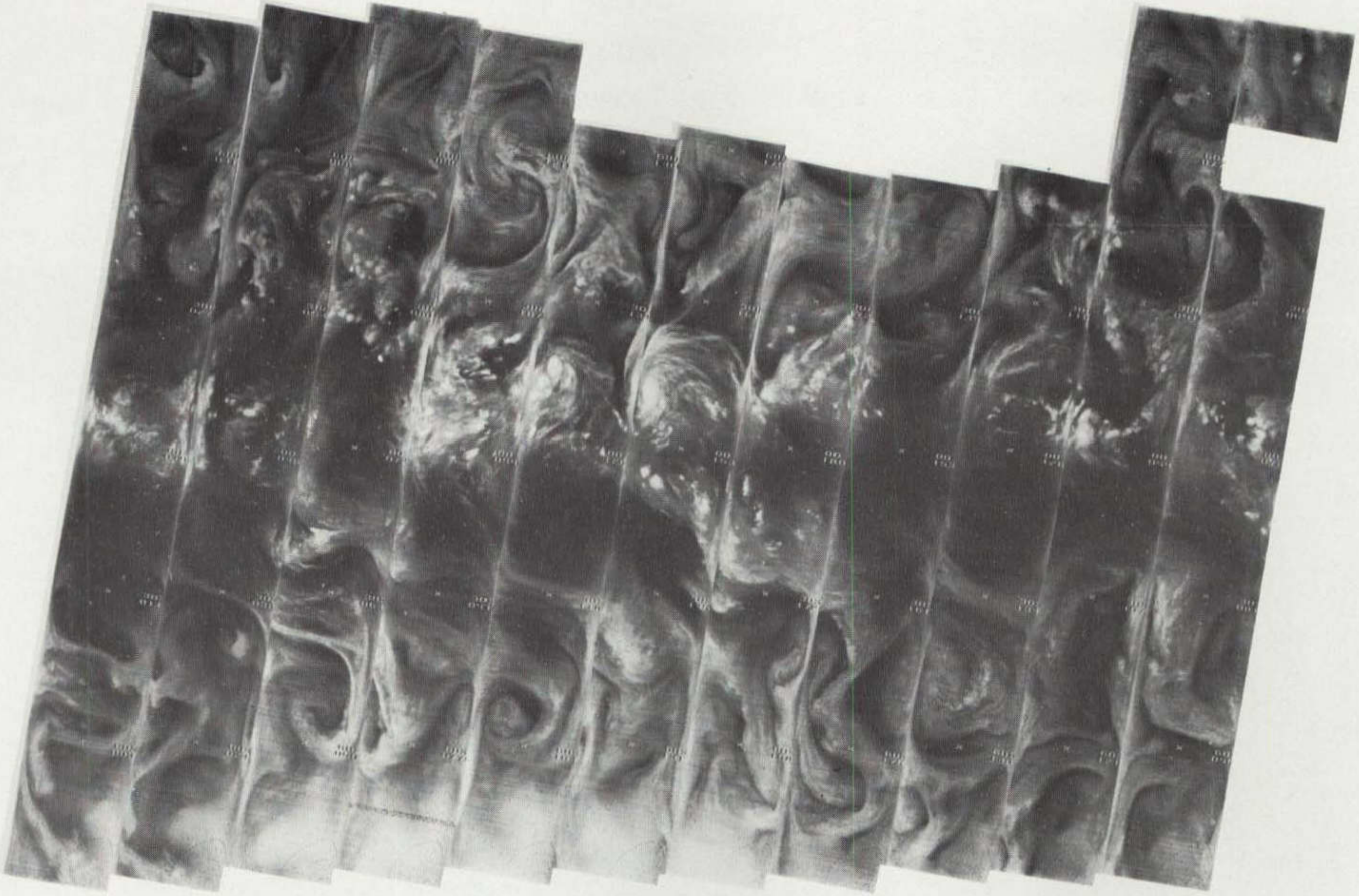
19 MAY 1976

6.7μm

4592 4591 4590 4589 4588 4587 4586 4585 4584 4583 4582 4581 4580

19 MAY 1976

11.5μm



4606 4605 4604 4603 4602 4601 4600 4599 4598 4597 4596 4595 4594 4493

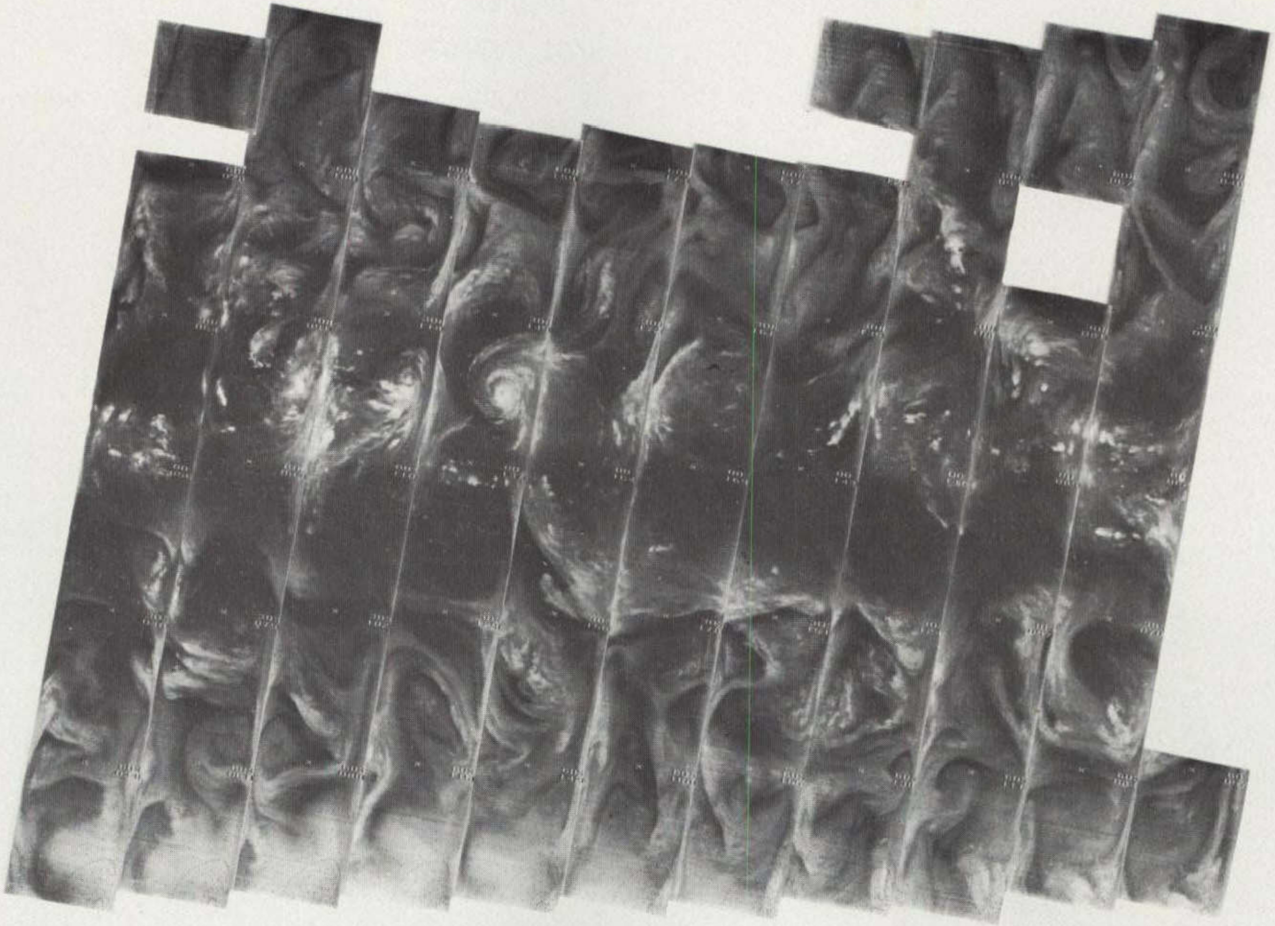
20 MAY 1976

6.7μm

4606 4605 4604 4603 4602 4601 4600 4599 4598 4597 4596 4595 4594 4493

20 MAY 1976

11.5μm



4619 4618 4617 4616 4615 4614 4613 4612 4611 4610 4609 4608 4607

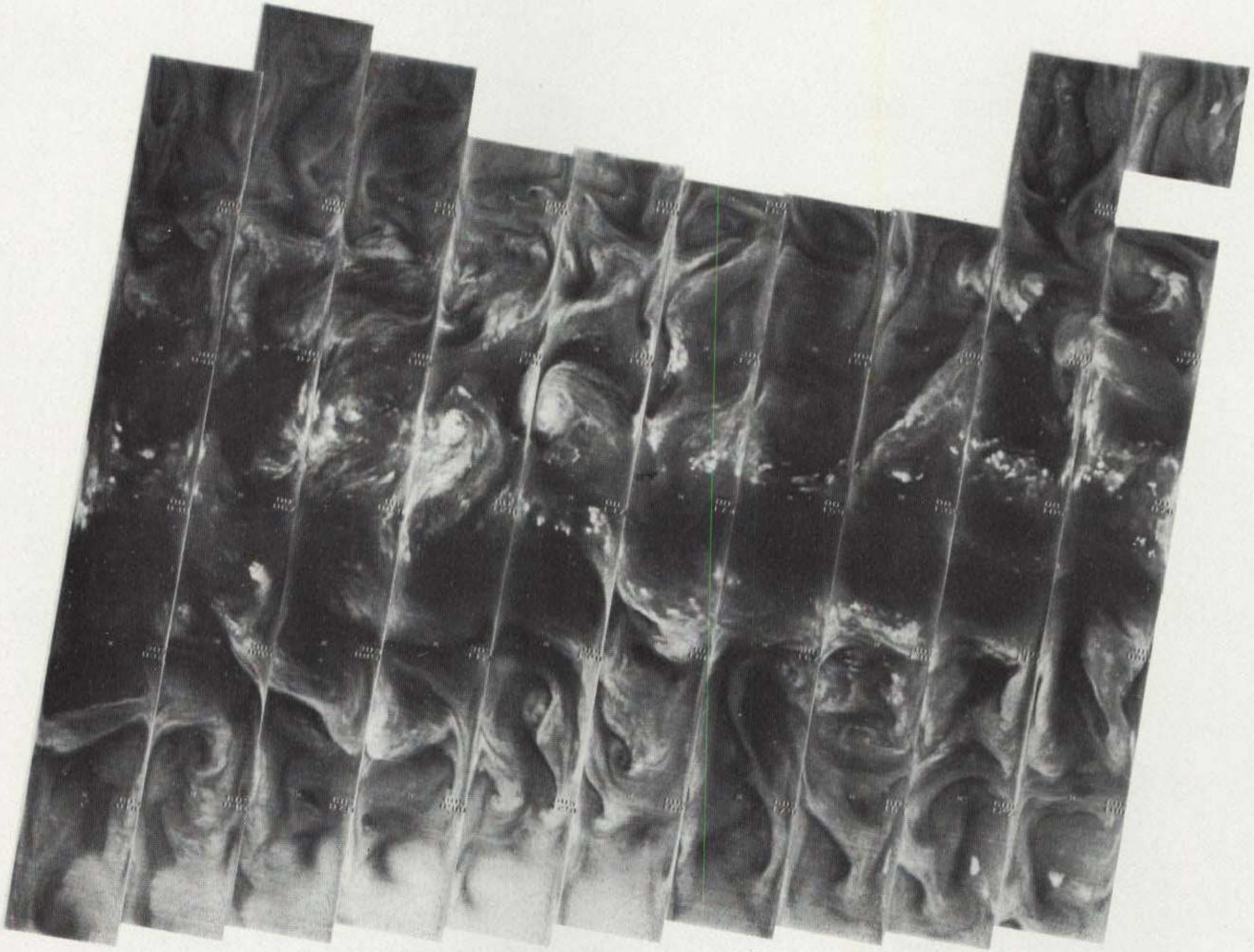
21 MAY 1976

6.7μm

4619 4618 4617 4616 4615 4614 4613 4612 4611 4610 4609 4608 4607

21 MAY 1976

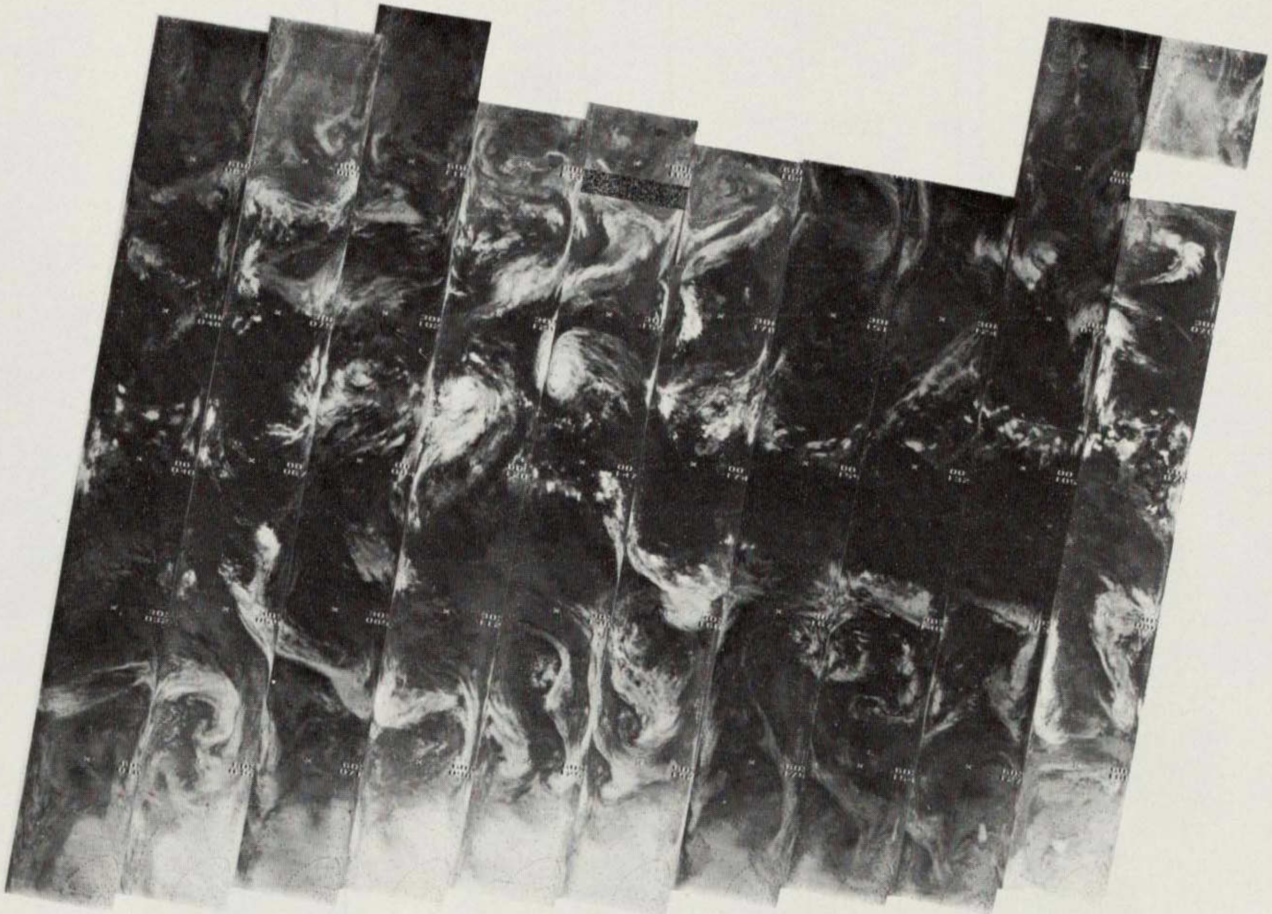
11.5μm



4633 4632 4631 4630 4629 4628 4627 4626 4625 4624 4623 4622 4621 4620

22 MAY 1976

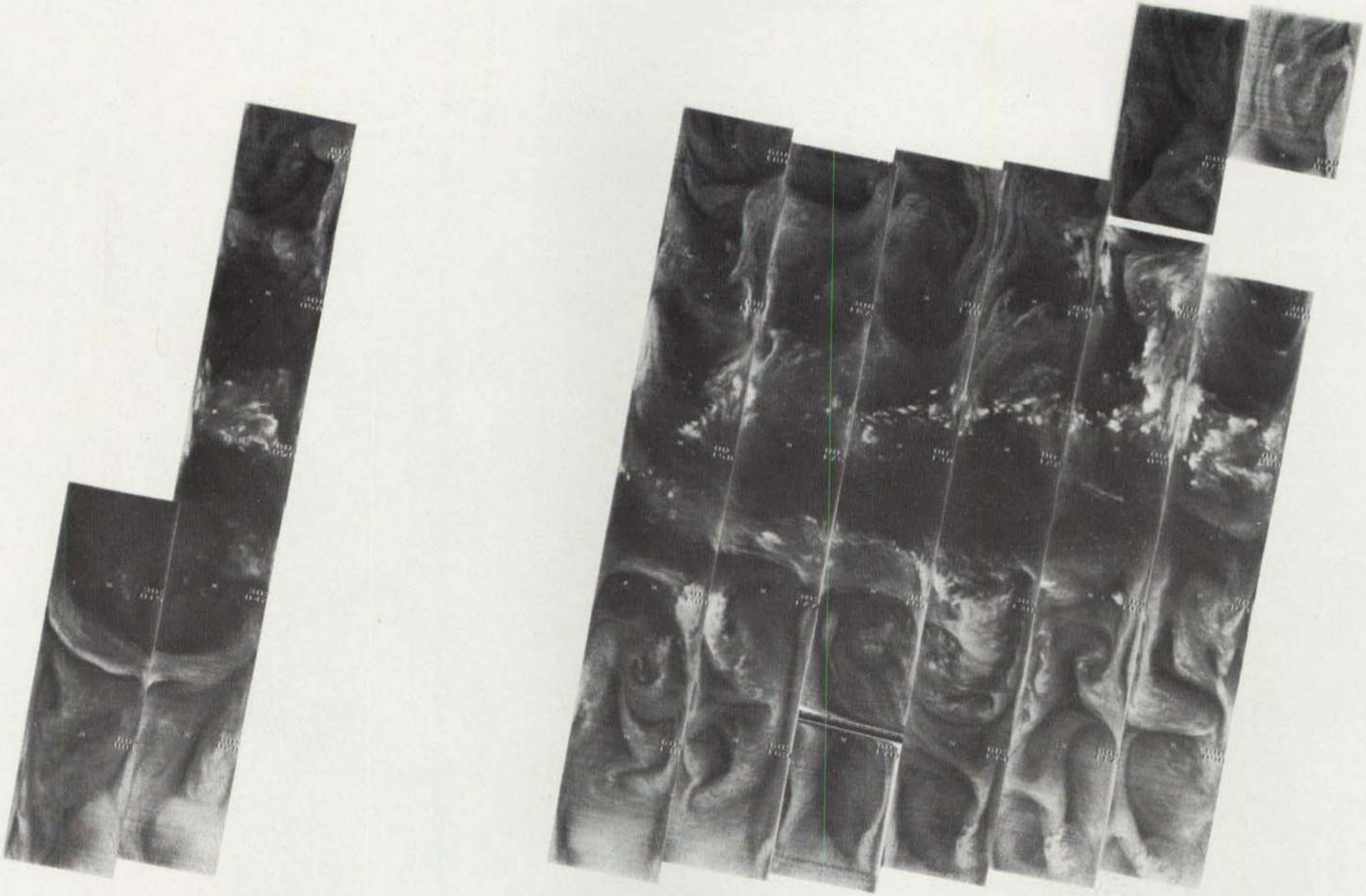
6.7μm



4633 4632 4631 4630 4629 4628 4627 4626 4625 4624 4623 4622 4621 4620

22 MAY 1976

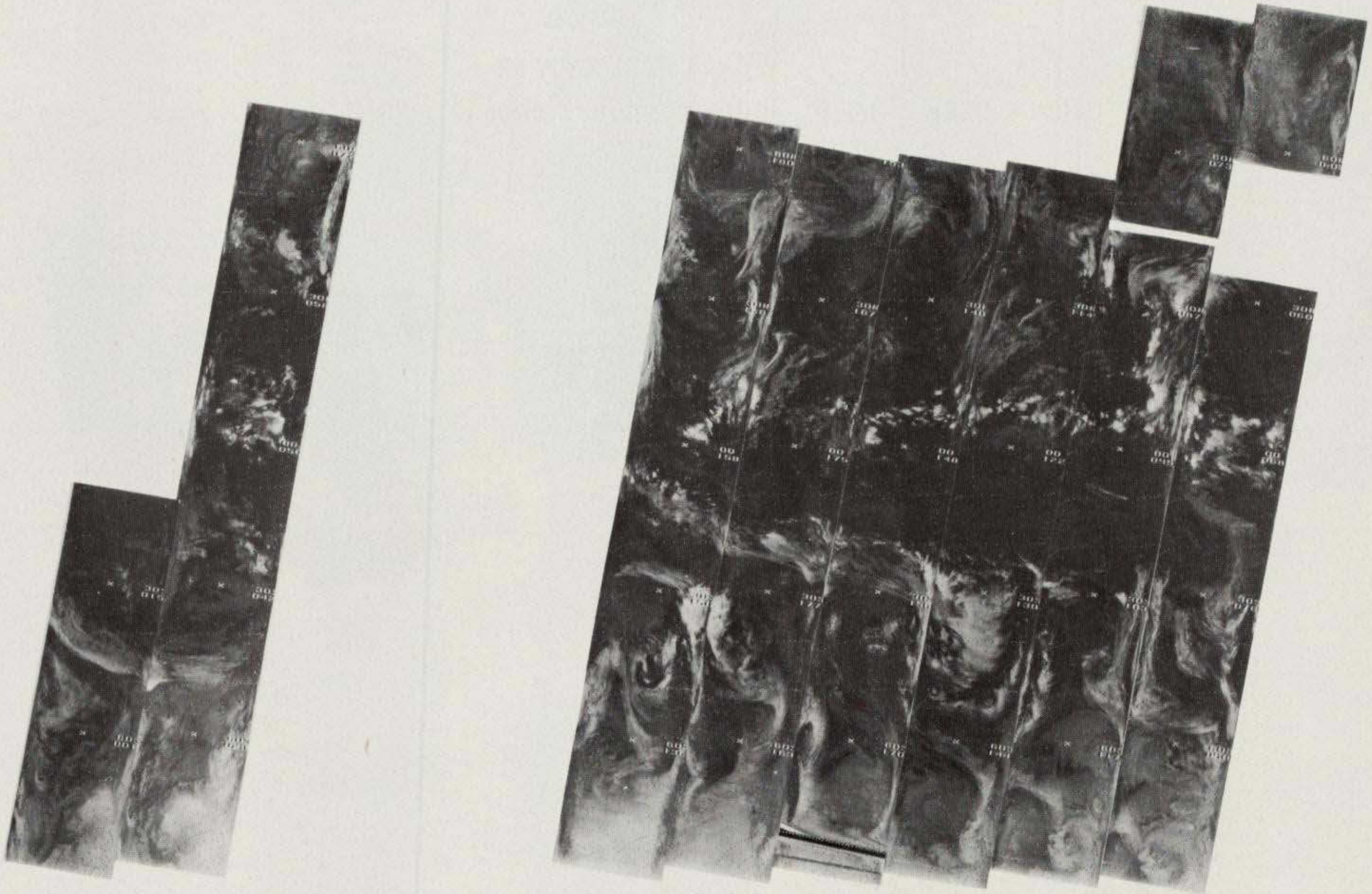
11.5μm



4646 4645 4644 4643 4642 4641 4640 4639 4638 4637 4636 4635 4634

23 MAY 1976

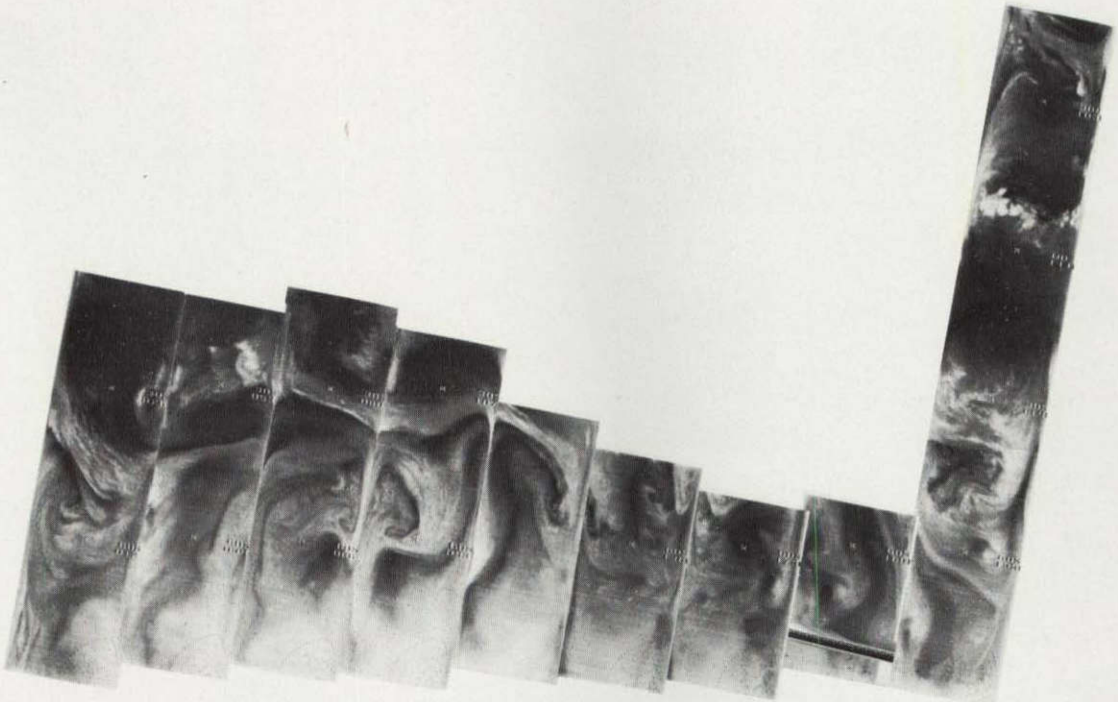
6.7μm



4646 4645 4644 4643 4642 4641 4640 4639 4638 4637 4636 4635 4634

23 MAY 1976

11.5μm



4659 4658 4657 4656 4655 4654 4653 4652 4651 4650 4649 4648 4647

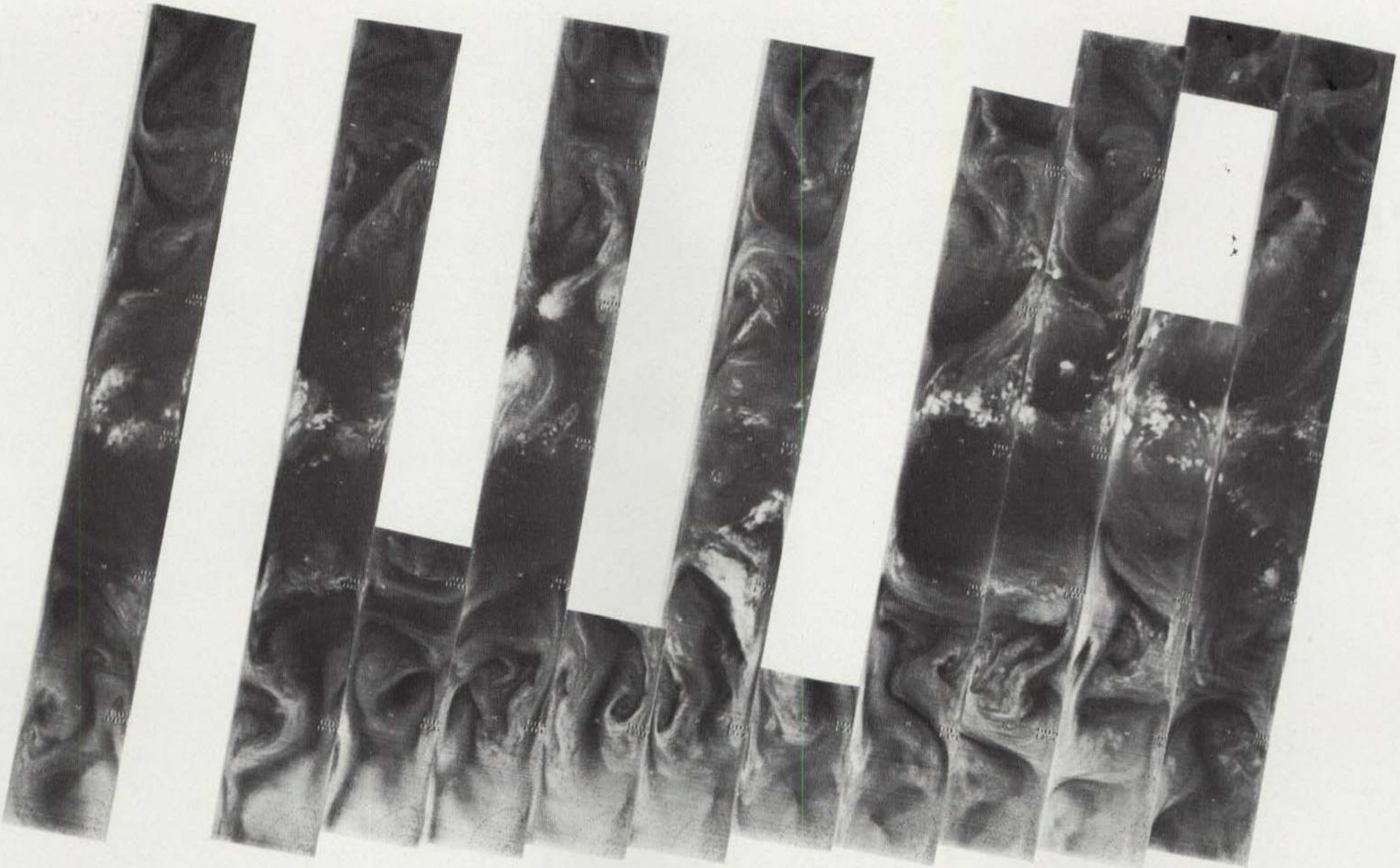
24 MAY 1976

6.7μm

4659 4658 4657 4656 4655 4654 4653 4652 4651 4650 4649 4648 4647

24 MAY 1976

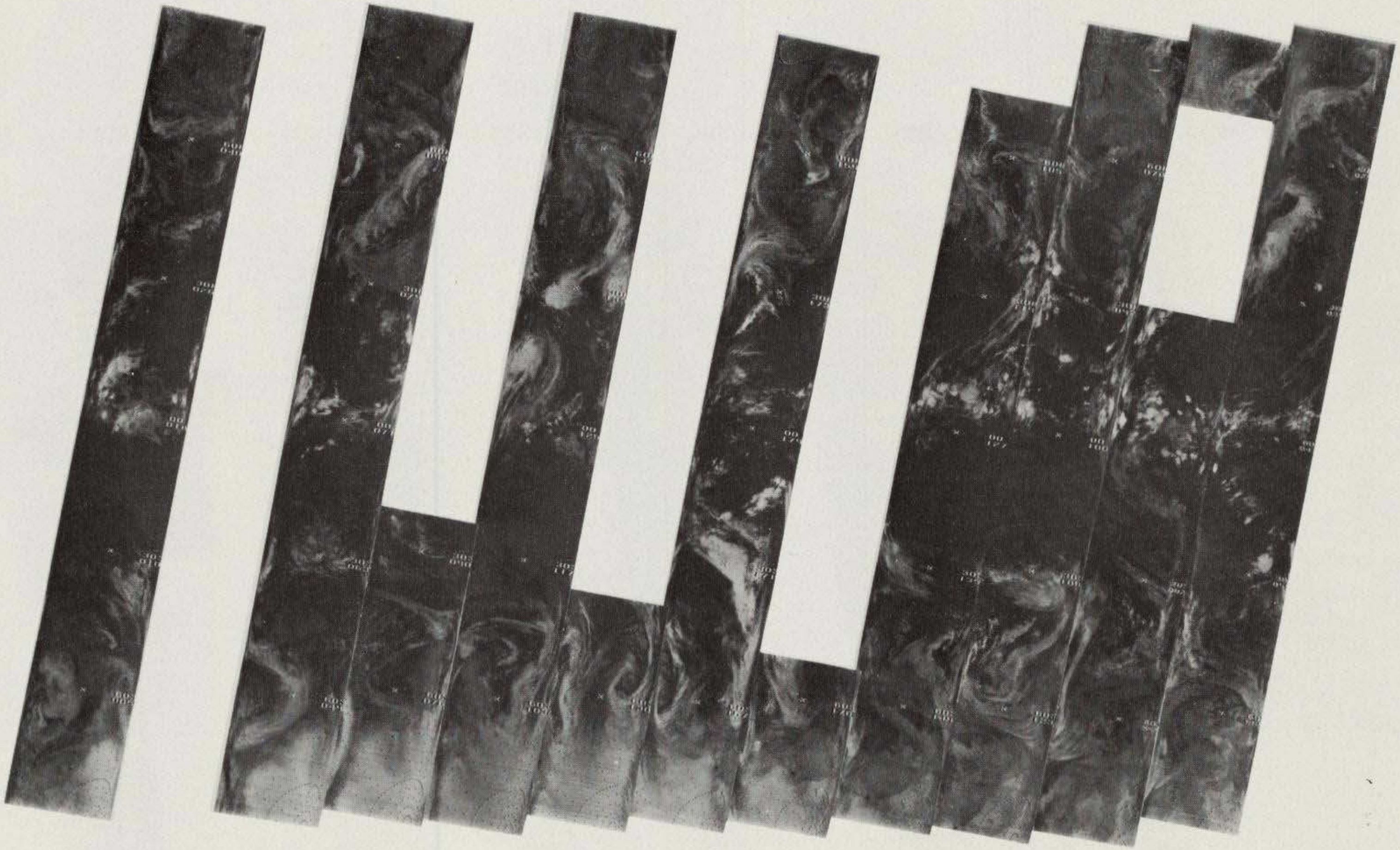
11.5μm



4673 4672 4671 4670 4669 4668 4667 4666 4665 4664 4663 4662 4661 4660

25 MAY 1976

6.7μm



4673 4672 4671 4670 4669 4668 4667 4666 4665 4664 4663 4662 4661 4660

25 MAY 1976

11.5μm

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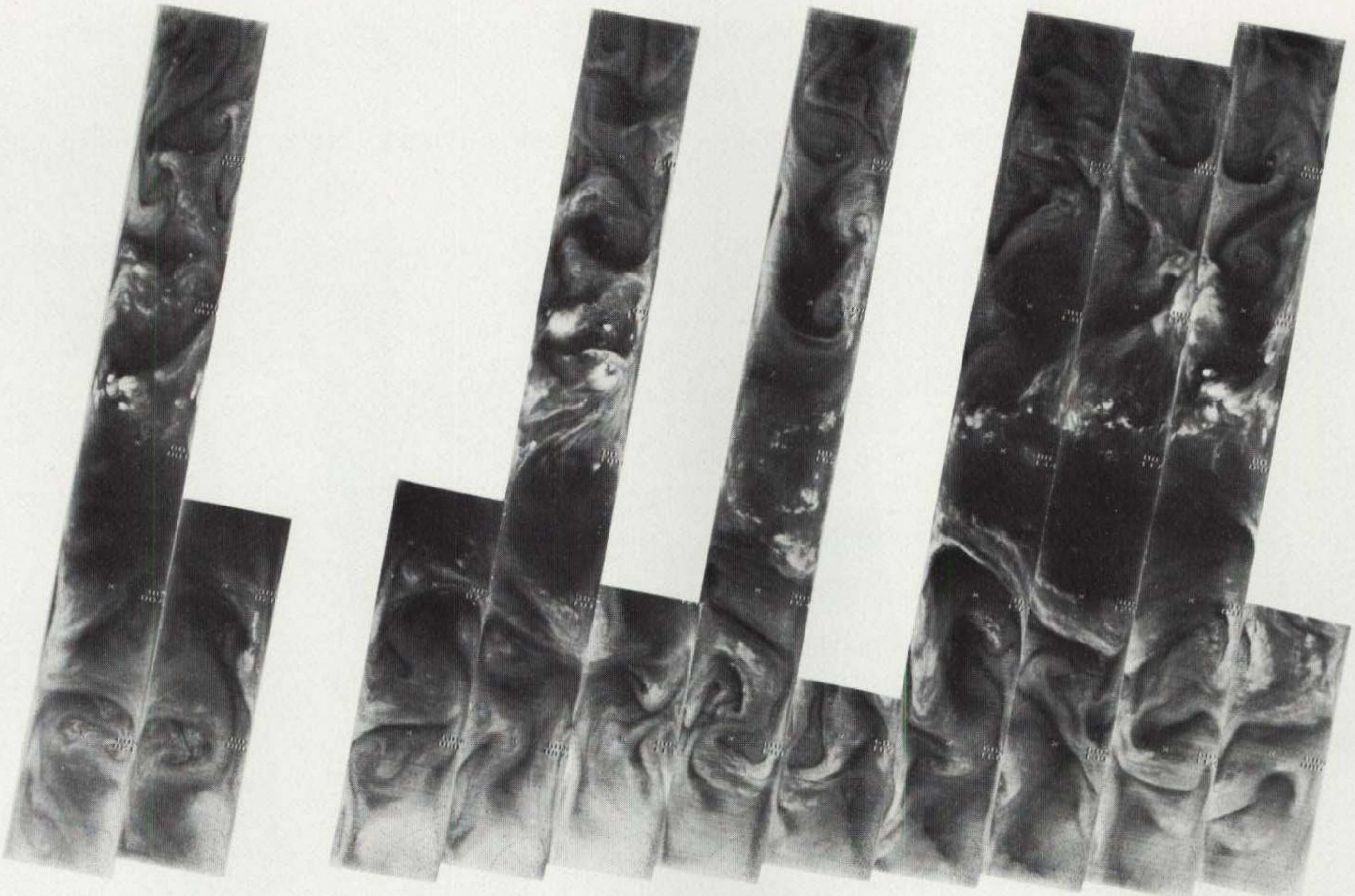
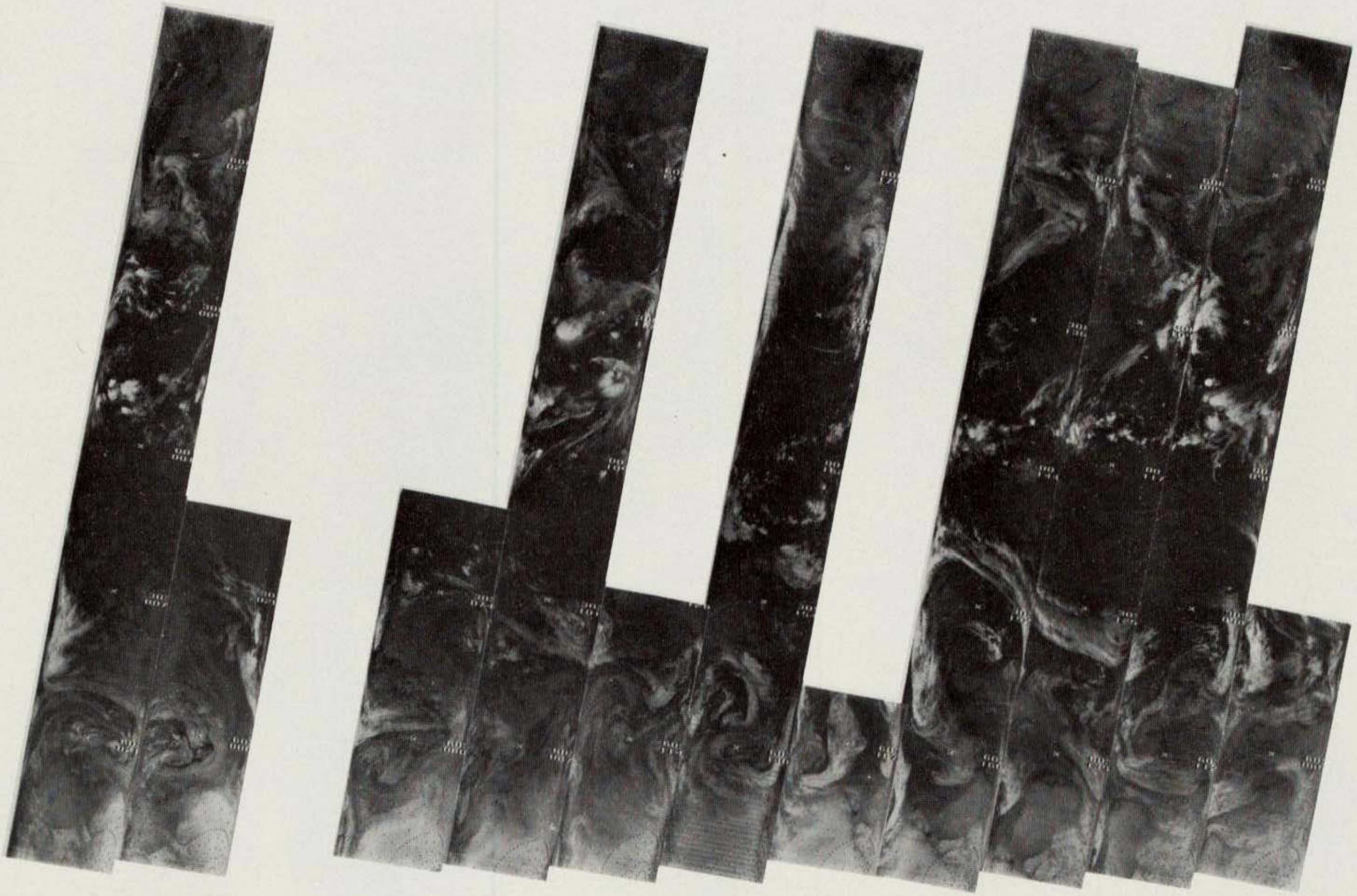


4686 4685 4684 4683 4682 4681 4680 4679 4678 4677 4676 4675 4674

26 MAY 1976

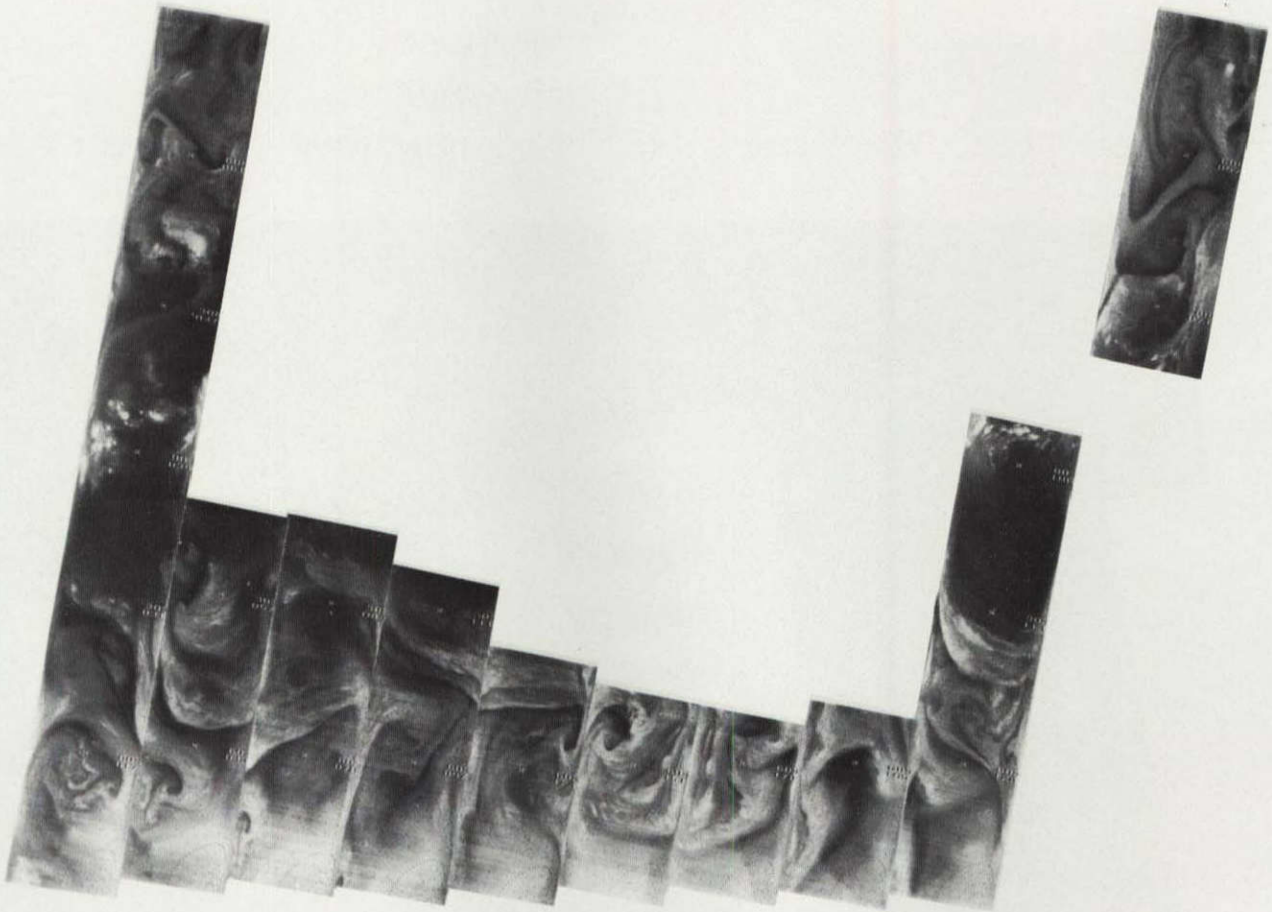
6.7μm



4686 4685 4684 4683 4682 4681 4680 4679 4678 4677 4676 4675 4674

26 MAY 1976

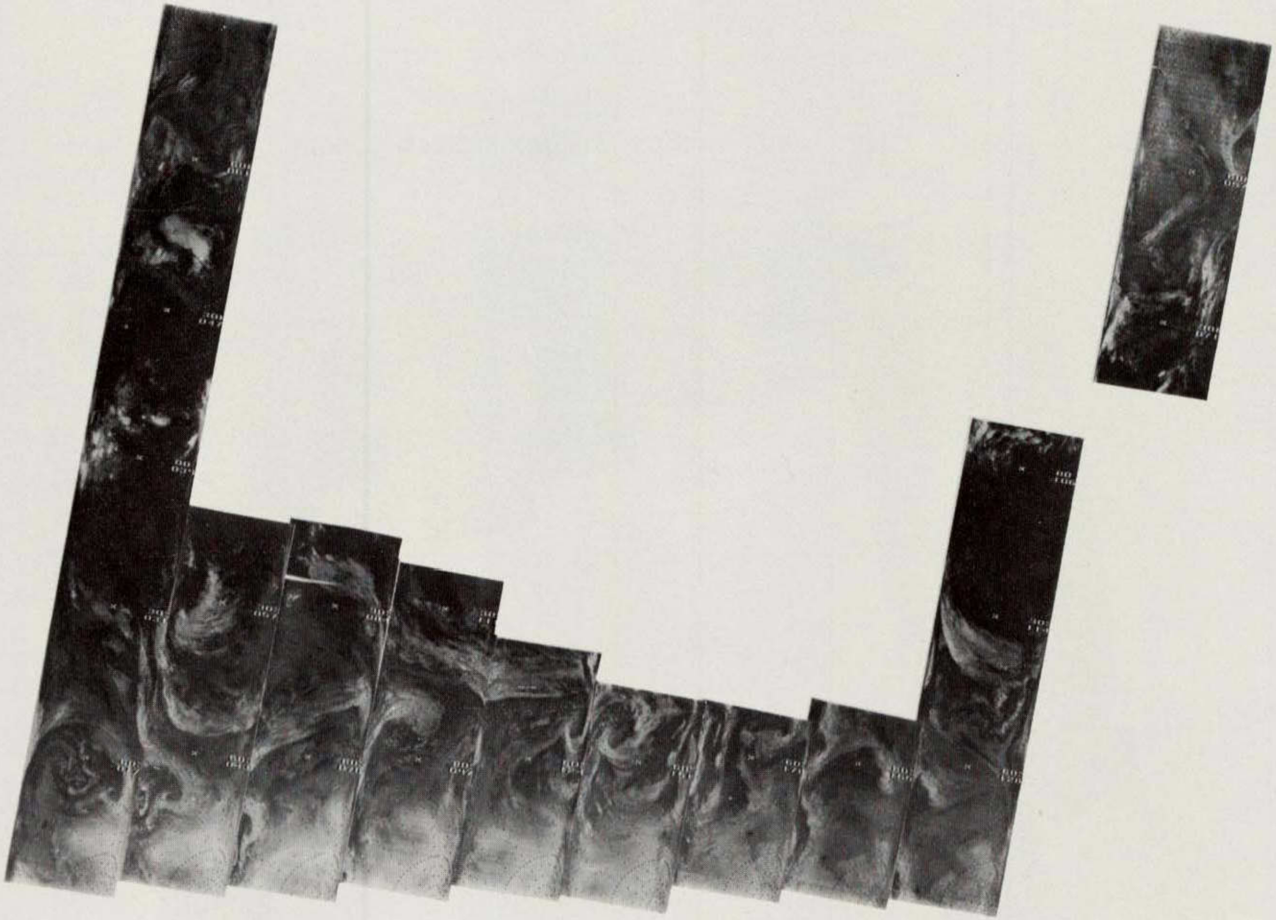
11.5μm



4700 4699 4698 4697 4696 4695 4694 4693 4692 4691 4690 4689 4688 4687

27 MAY 1976

6.7μm



4700 4699 4698 4697 4696 4695 4694 4693 4692 4691 4690 4689 4688 4687

27 MAY 1976

11.5μm

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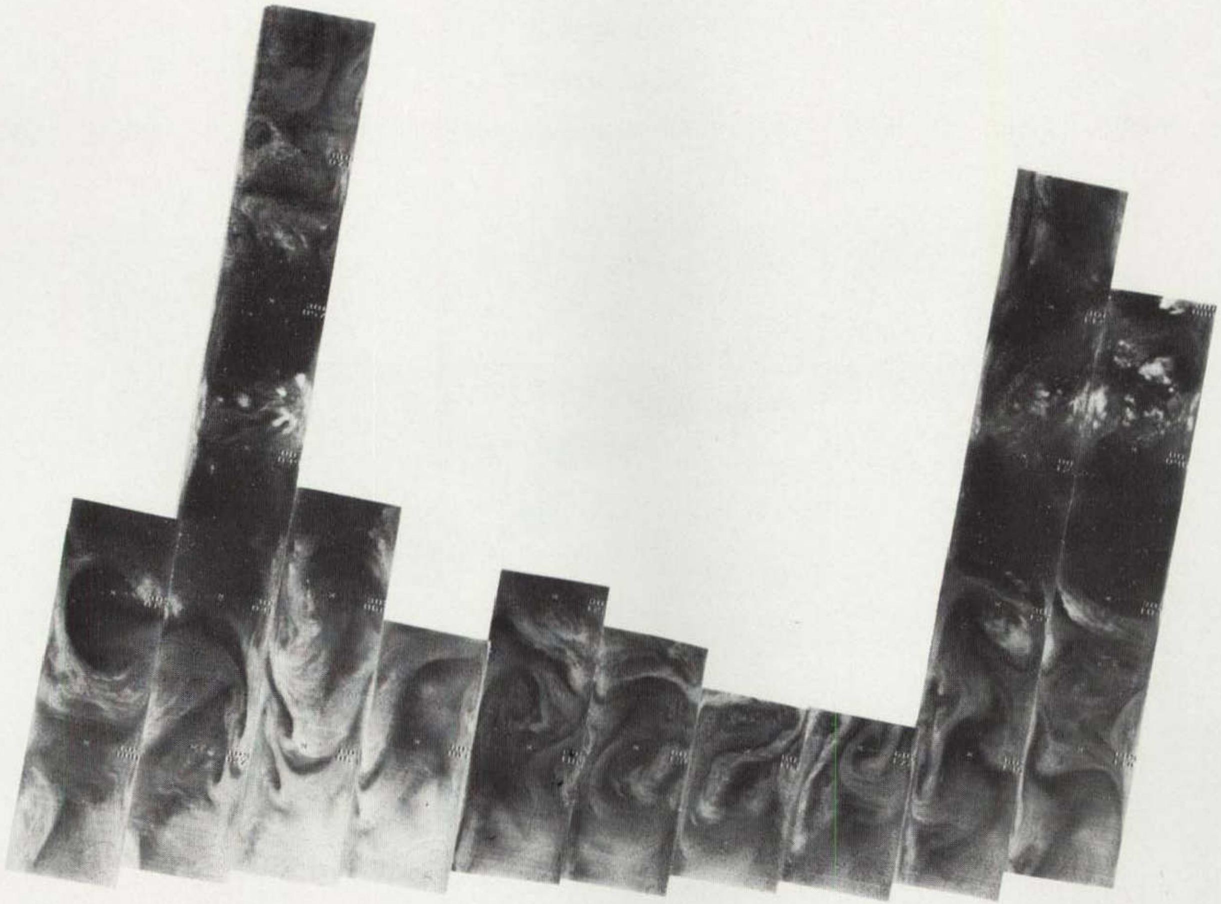
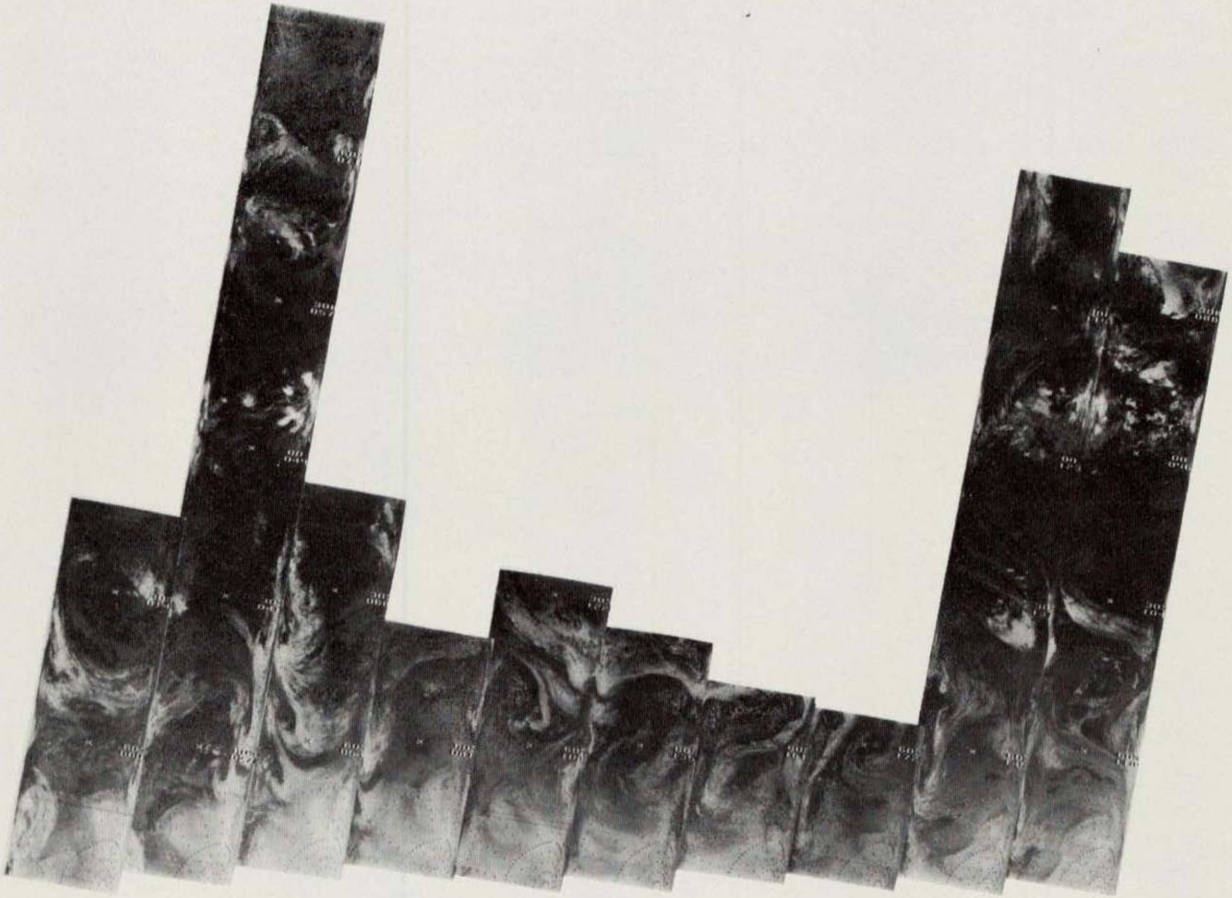


4713 4712 4711 4710 4709 4708 4707 4706 4705 4704 4703 4702 4701

28 MAY 1976

6.7μm



4713 4712 4711 4710 4709 4708 4707 4706 4705 4704 4703 4702 4701

28 MAY 1976

11.5μm

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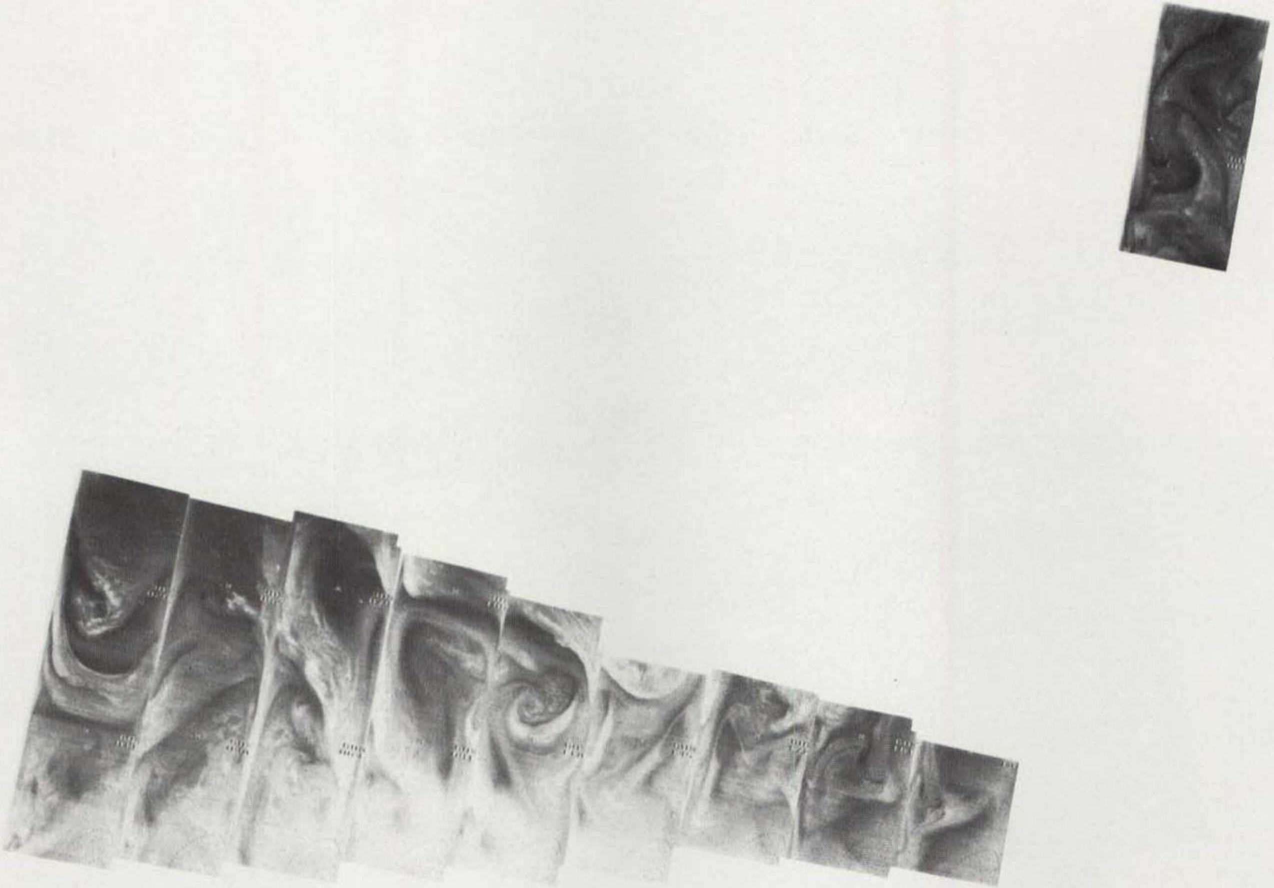
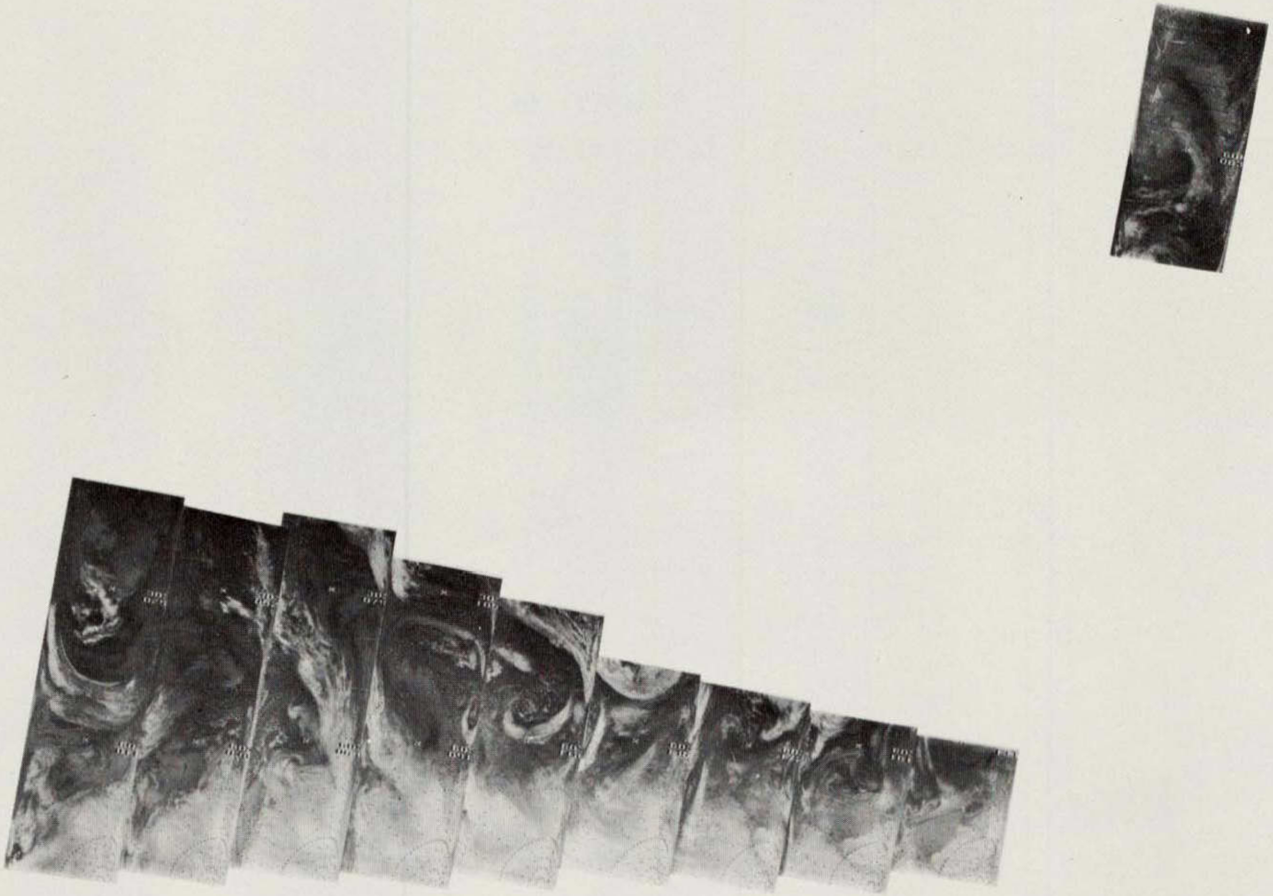


4726 4725 4724 4723 4722 4721 4720 4719 4718 4717 4716 4715 4714

29 MAY 1976

6.7μm



4726 4725 4724 4723 4722 4721 4720 4719 4718 4717 4716 4715 4714

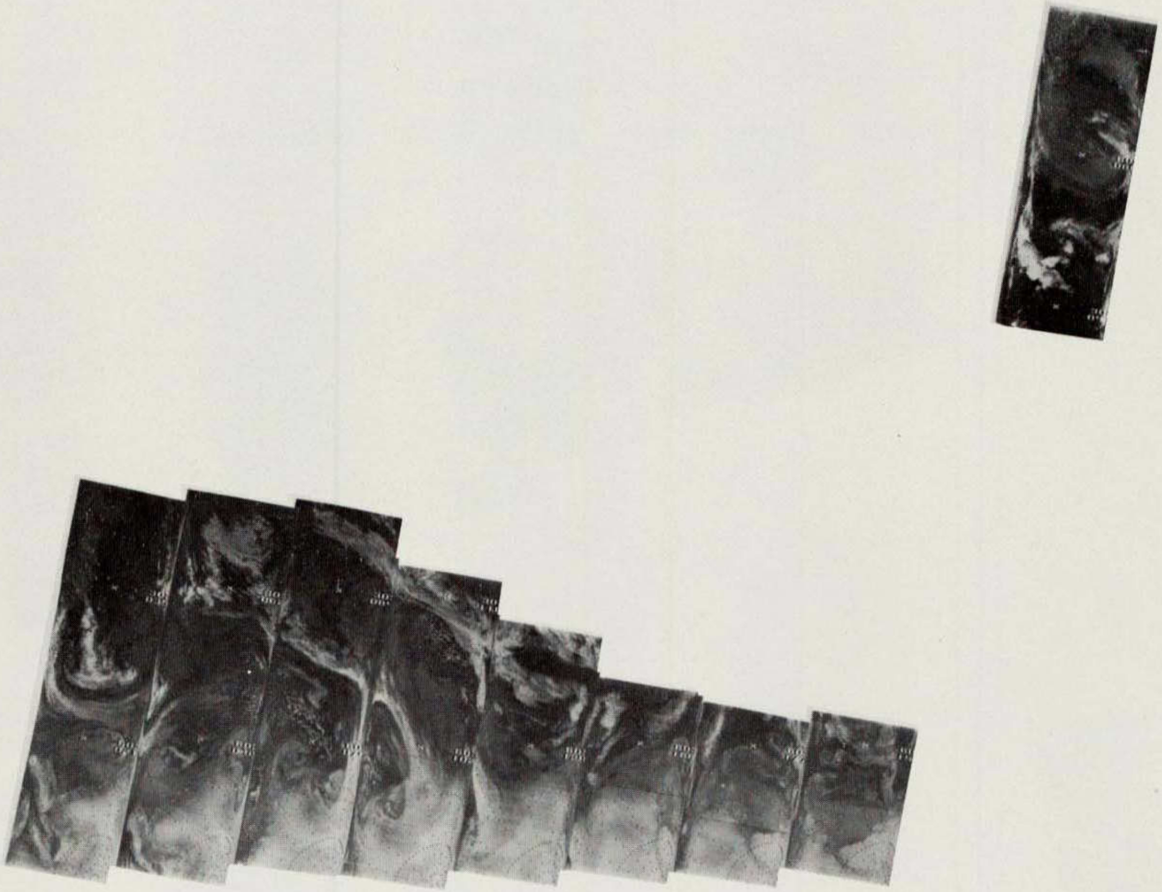
29 MAY 1976

11.5μm

4740 4739 4738 4737 4736 4735 4734 4733 4732 4731 4730 4729 4728 4727

30 MAY 1976

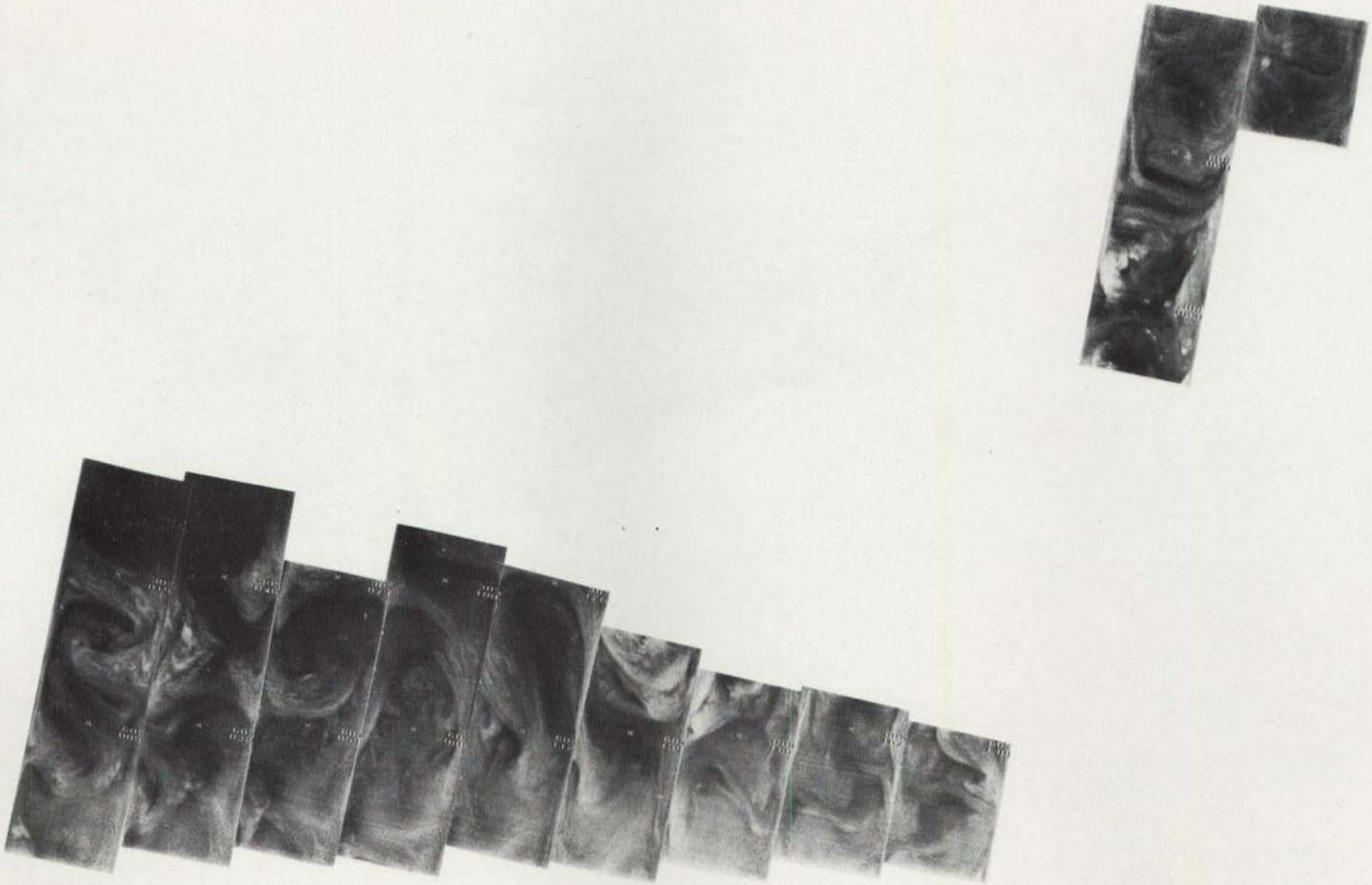
6.7μm



4740 4739 4738 4737 4736 4735 4734 4733 4732 4731 4730 4729 4728 4727

30 MAY 1976

11.5μm



4753 4752 4751 4750 4749 4748 4747 4746 4745 4744 4743 4742 4741

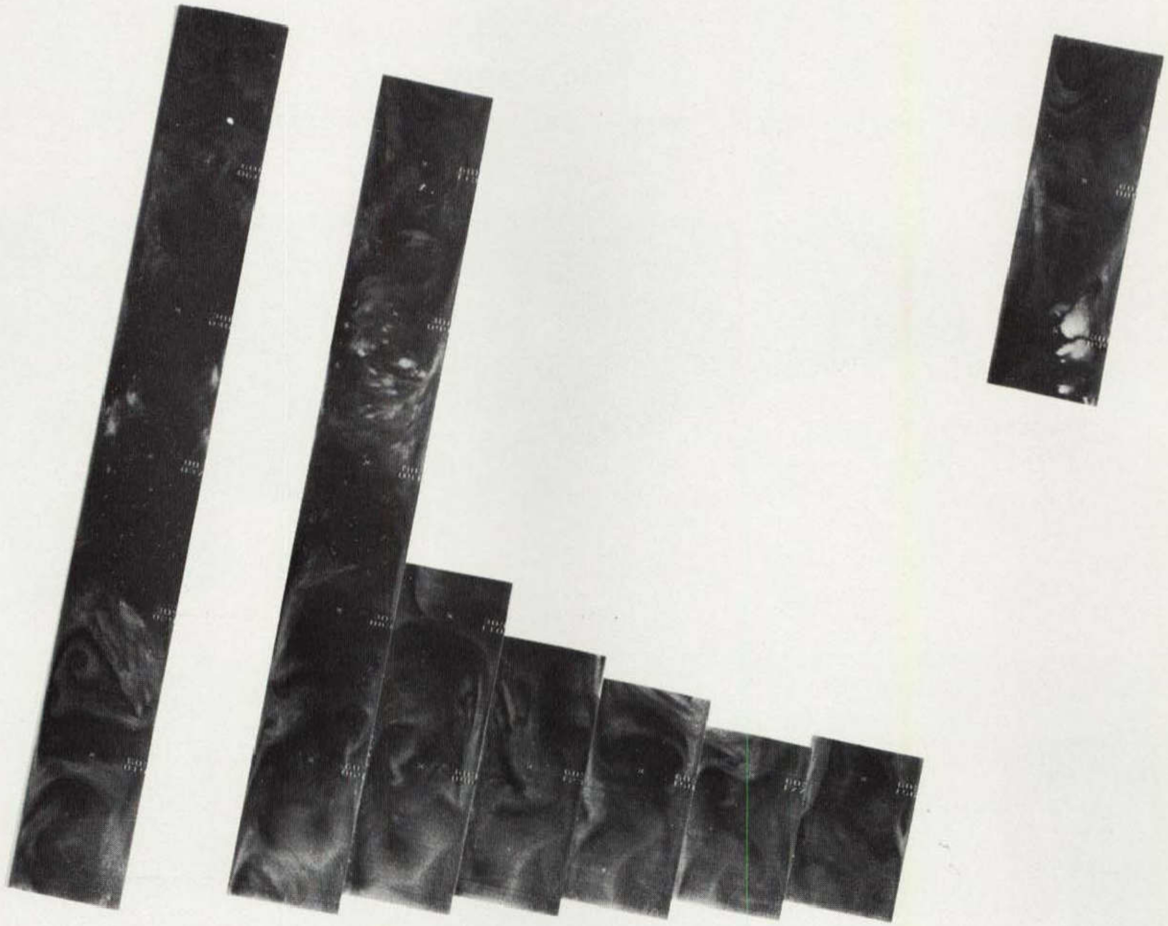
31 MAY 1976

6.7μm

4753 4752 4751 4750 4749 4748 4747 4746 4745 4744 4743 4742 4741

31 MAY 1976

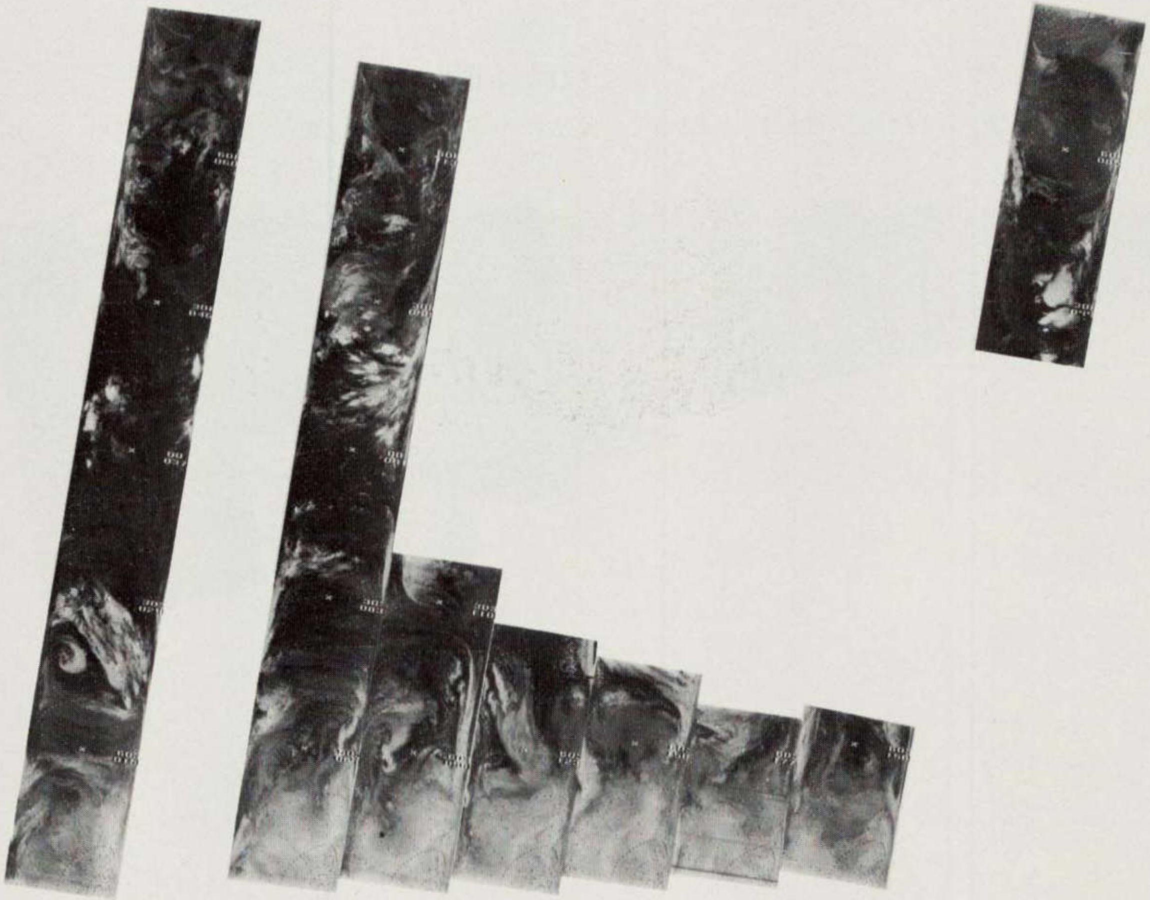
11.5μm



4767 4766 4765 4764 4763 4762 4761 4760 4759 4758 4757 4756 4755 4754

1 JUN 1976

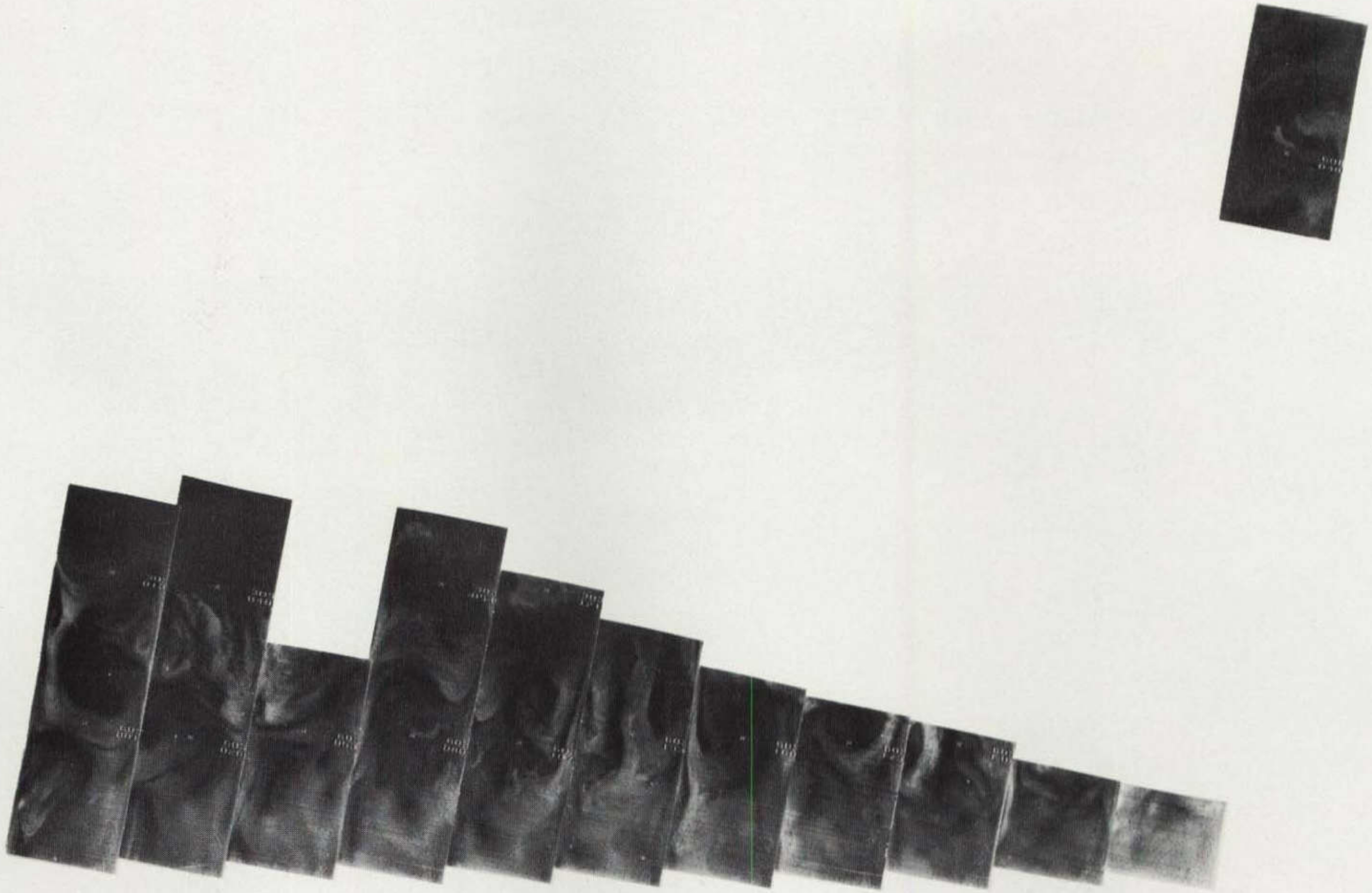
6.7μm



4767 4766 4765 4764 4763 4762 4761 4760 4759 4758 4757 4756 4755 4754

1 JUN 1976

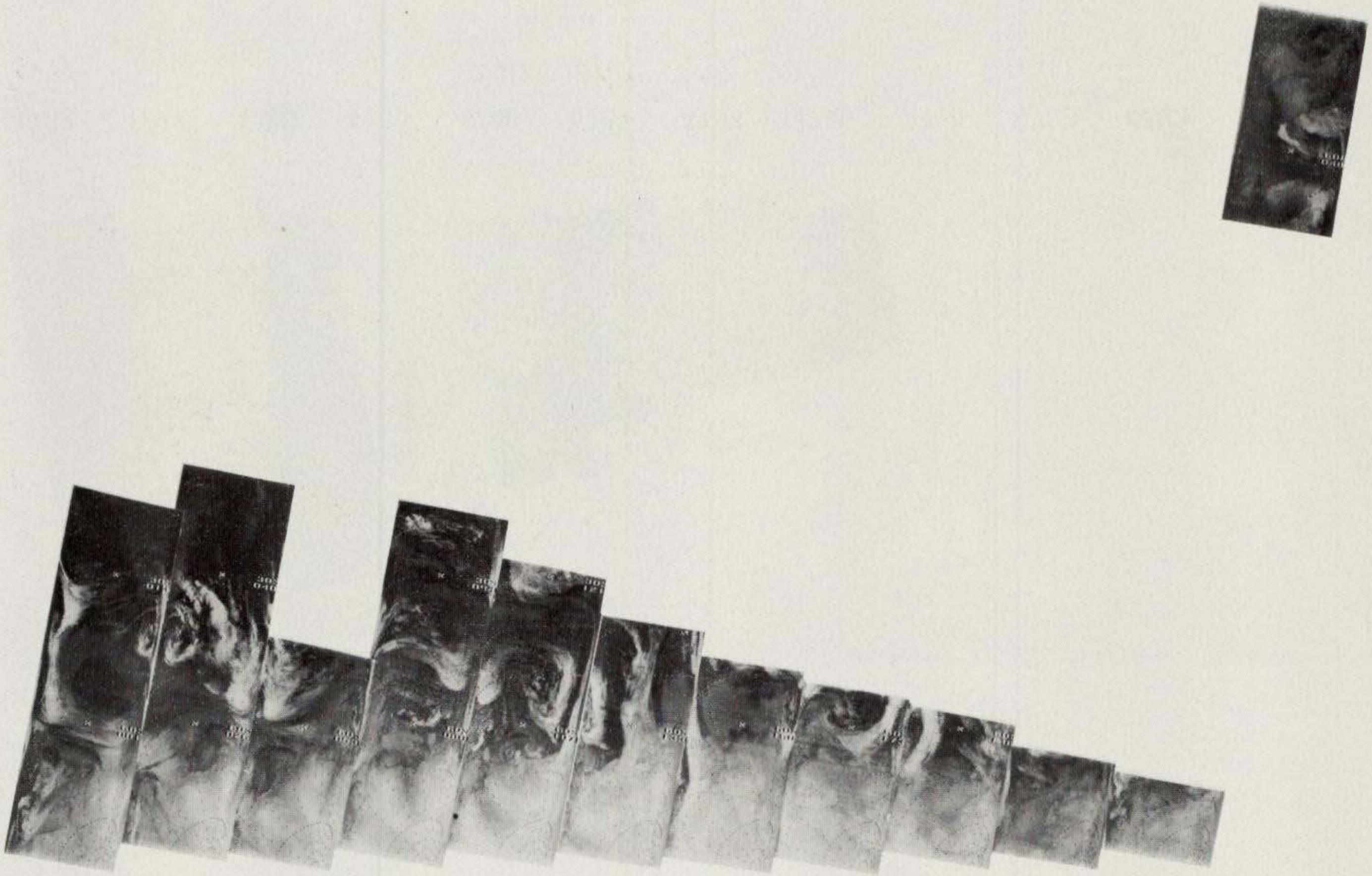
11.5μm



4780 4779 4778 4777 4776 4775 4774 4773 4772 4771 4770 4769 4768

2 JUN 1976

6.7μm



4780 4779 4778 4777 4776 4775 4774 4773 4772 4771 4770 4769 4768

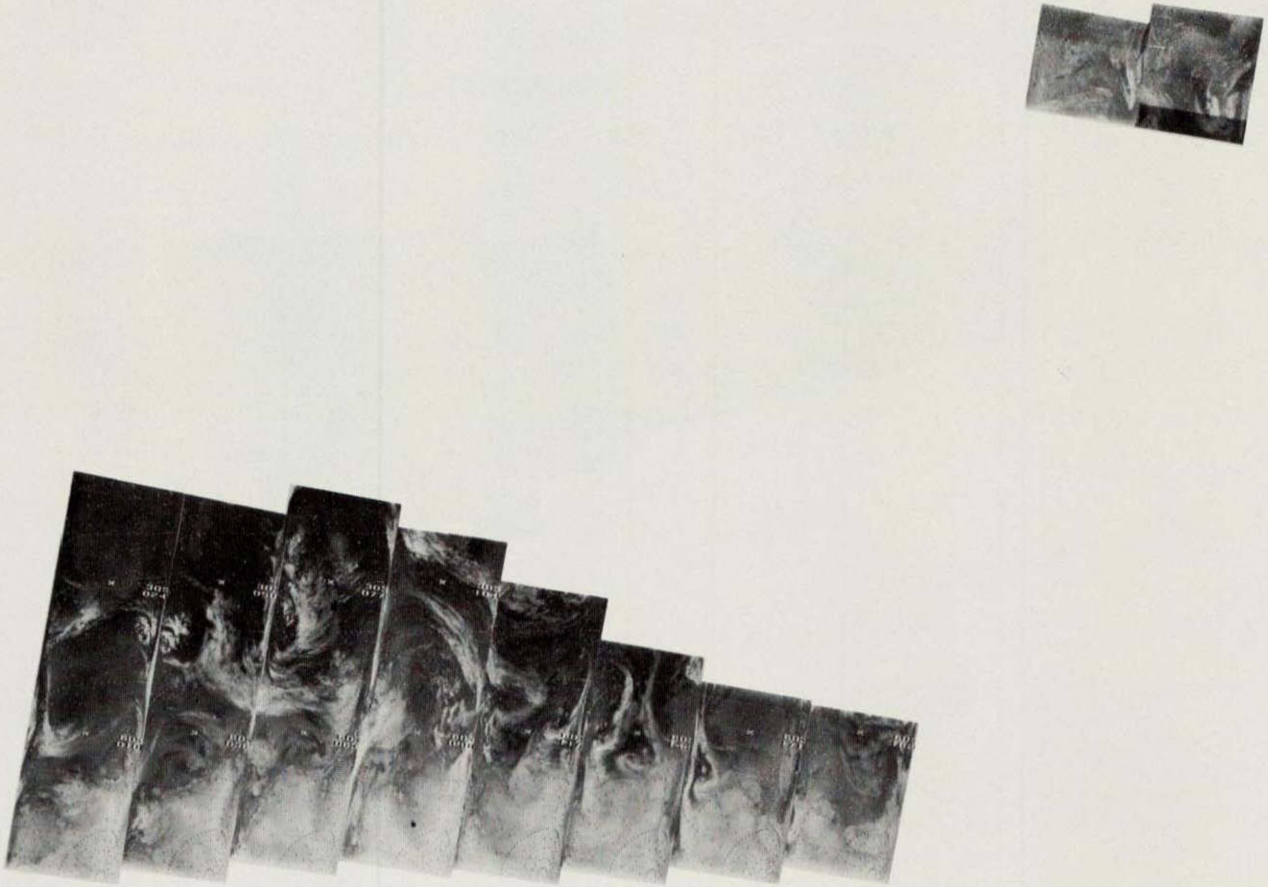
2 JUN 1976

11.5μm

4793 4792 4791 4790 4789 4788 4787 4786 4785 4784 4783 4782 4781

3 JUN 1976

6.7μm



4793 4792 4791 4790 4789 4788 4787 4786 4785 4784 4783 4782 4781

3 JUN 1976

$11.5\mu m$

4807 4806 4805 4804 4803 4802 4801 4800 4799 4798 4797 4796 4795 4794

4 JUN 1976

6.7μm

4807 4806 4805 4804 4803 4802 4801 4800 4799 4798 4797 4796 4795 4794

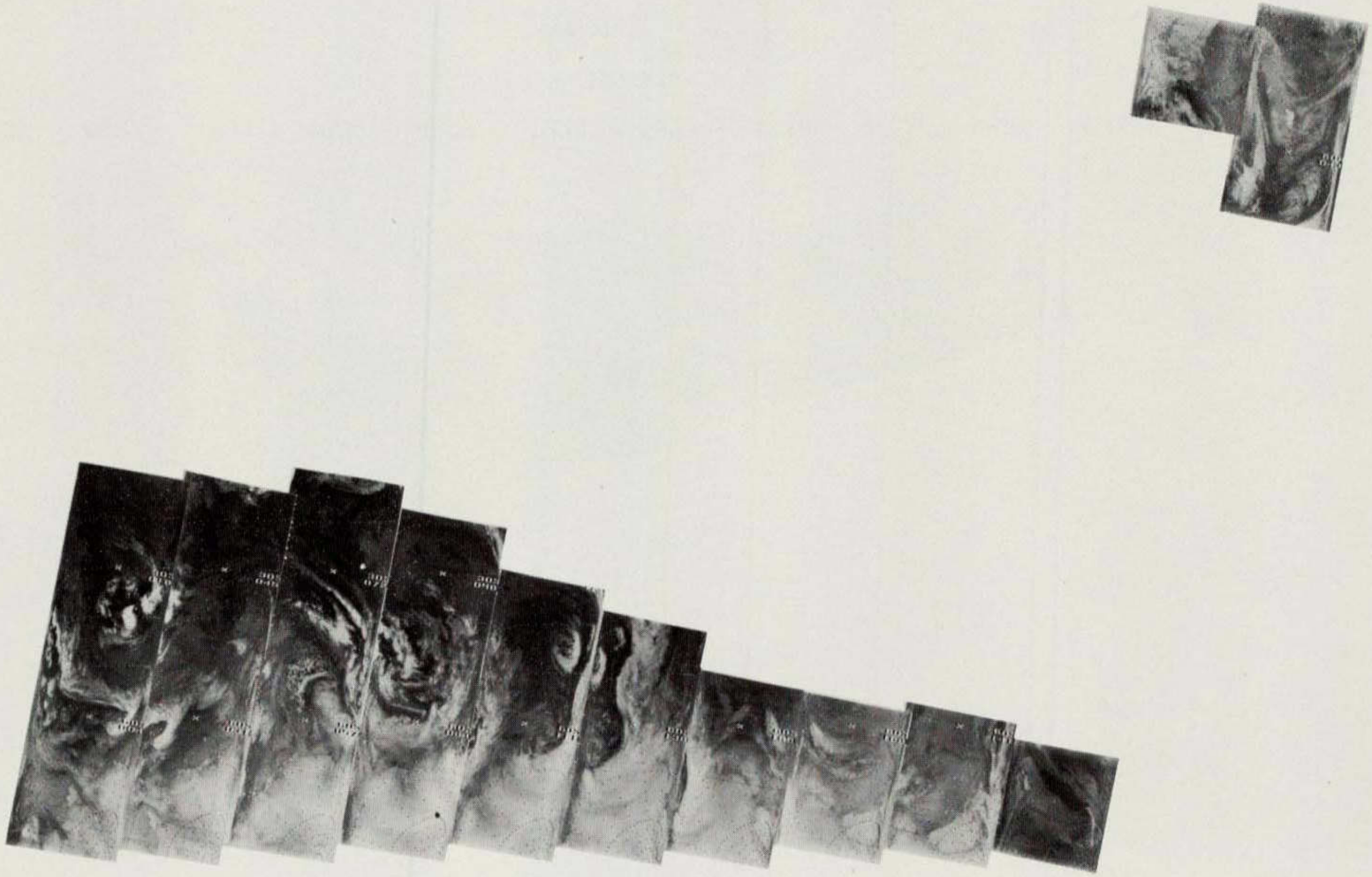
4 JUN 1976

11.5μm

4820 4819 4818 4817 4816 4815 4814 4813 4812 4811 4810 4809 4808

5 JUN 1976

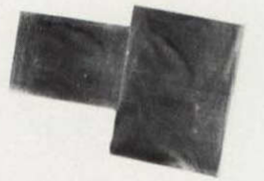
6.7μm

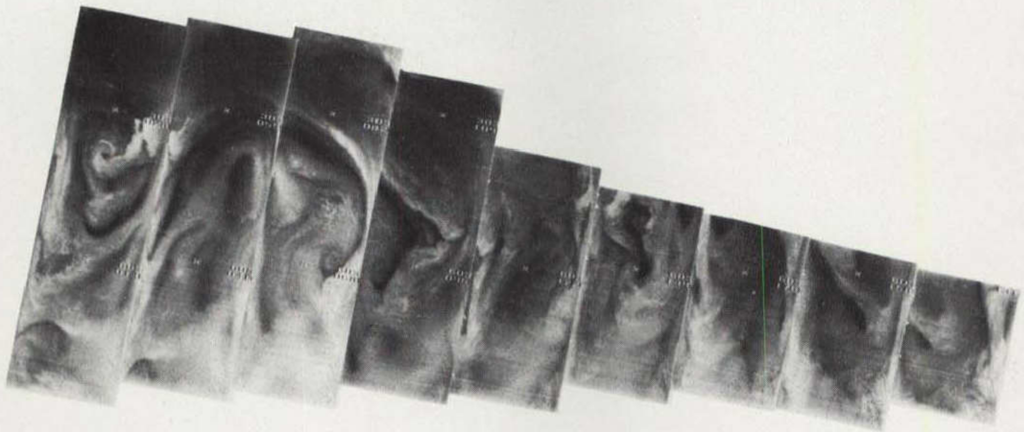


4820 4819 4818 4817 4816 4815 4814 4813 4812 4811 4810 4809 4808

5 JUN 1976

11.5μm

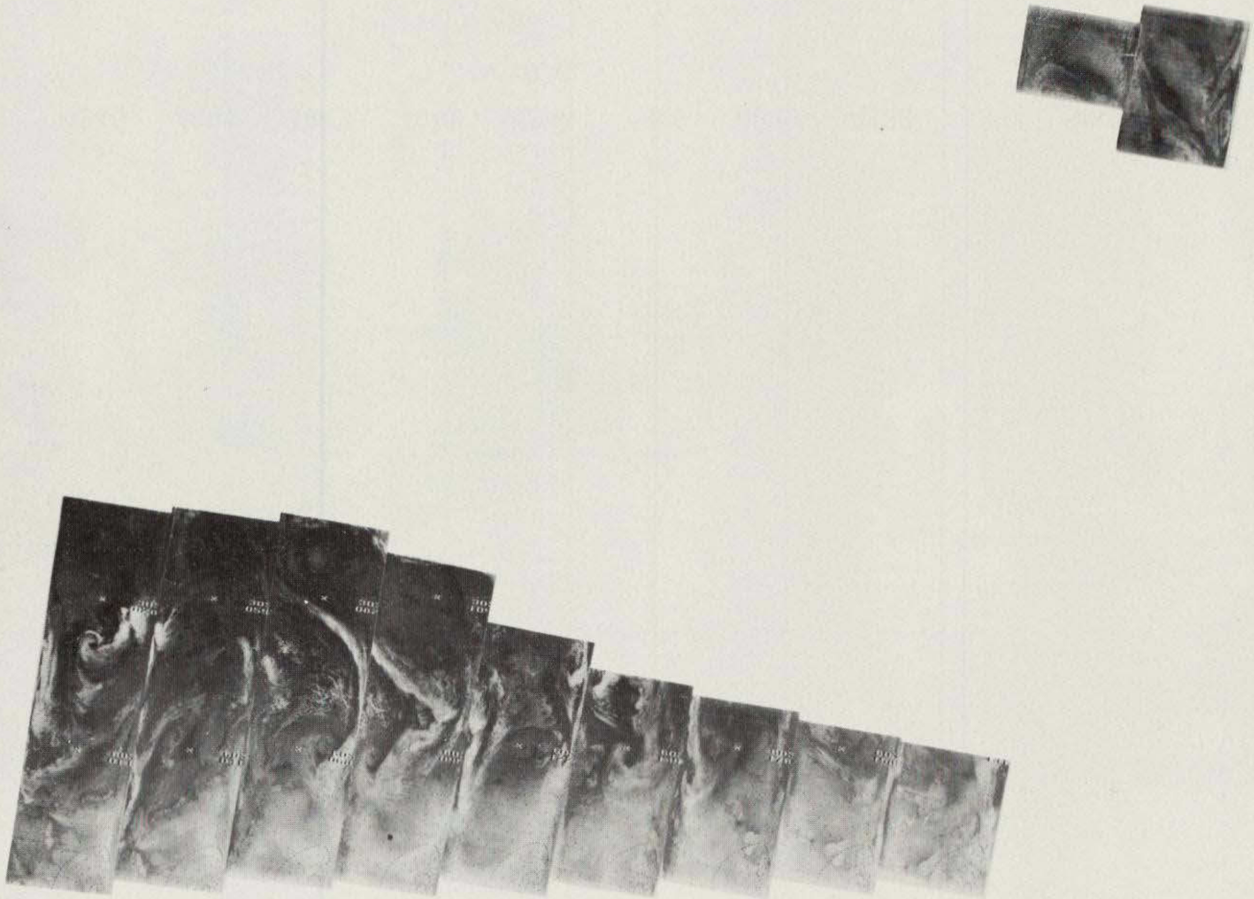




4834 4833 4832 4831 4830 4829 4828 4827 4826 4825 4824 4823 4822 4821

6 JUN 1976

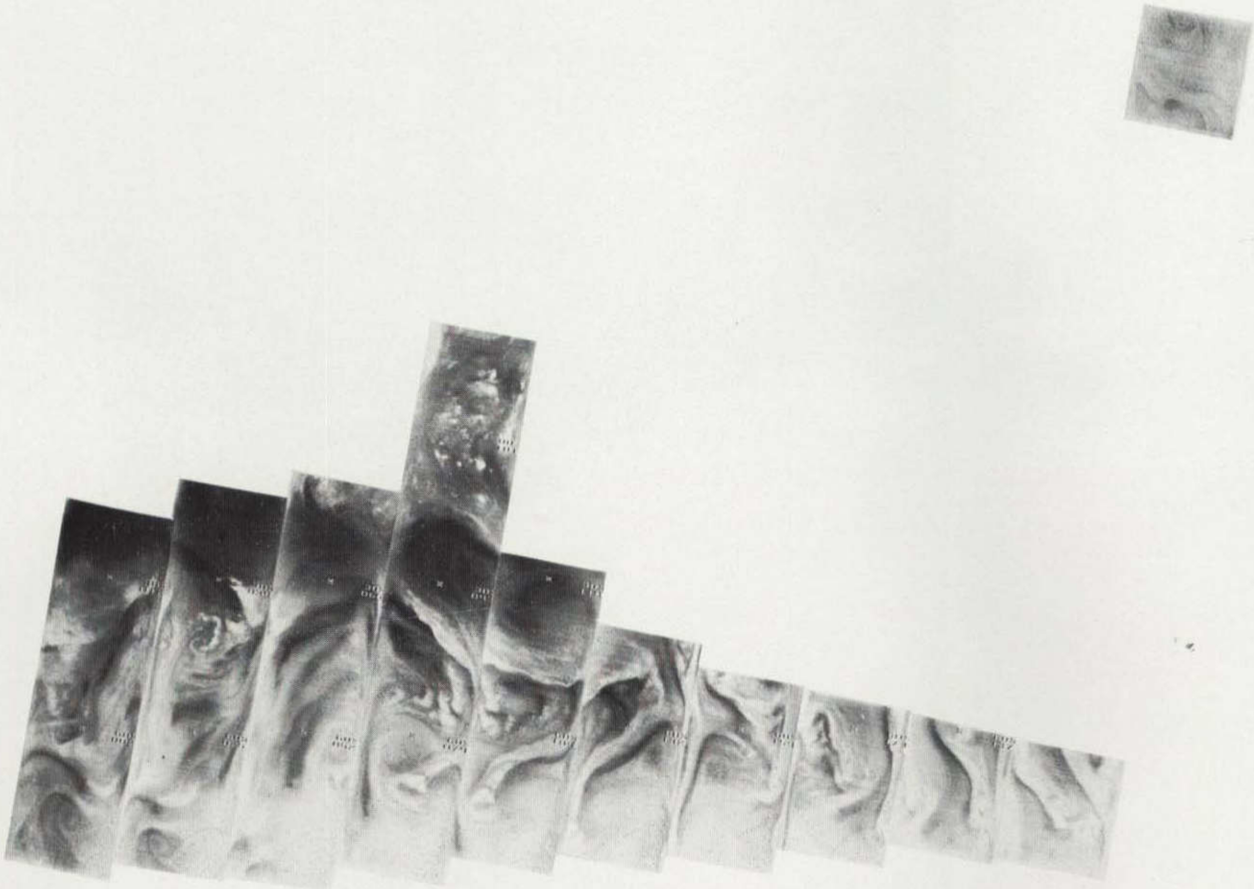
6.7μm



4834 4833 4832 4831 4830 4829 4828 4827 4826 4825 4824 4823 4822 4821

6 JUN 1976

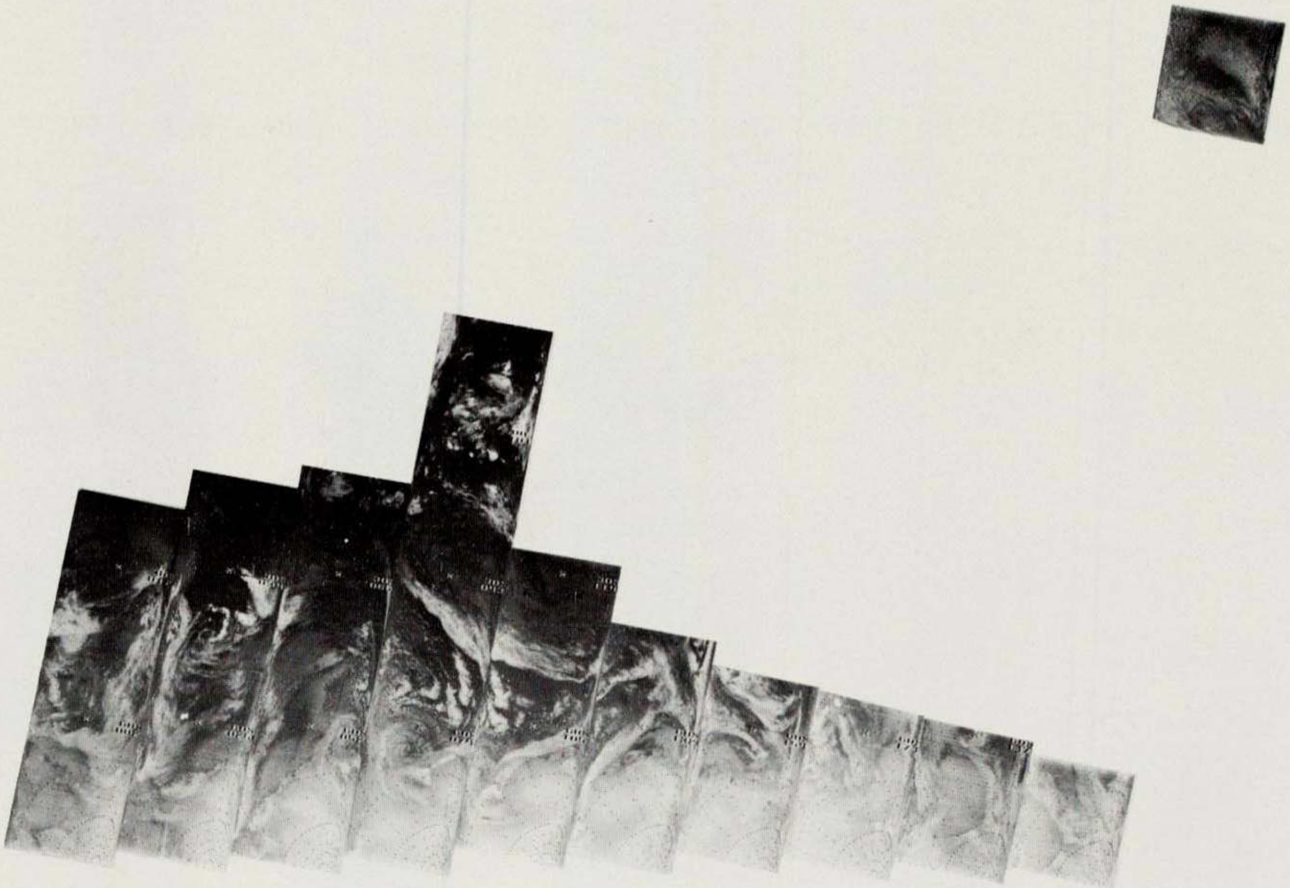
11.5μm



4847 4846 4845 4844 4843 4842 4841 4840 4839 4838 4837 4836 4835

7 JUN 1976

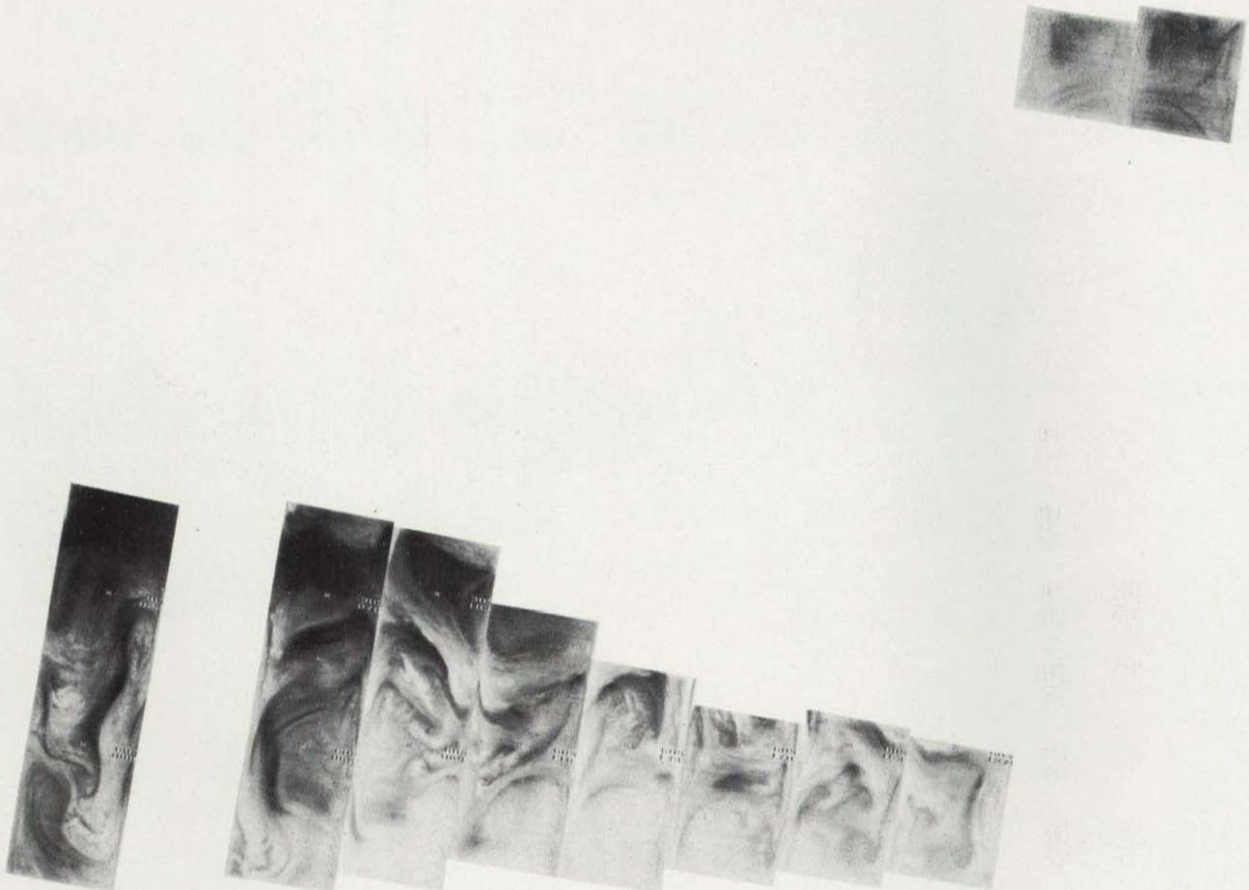
6.7μm



4847 4846 4845 4844 4843 4842 4841 4840 4839 4838 4837 4836 4835

7 JUN 1976

11.5μm



4860 4859 4858 4857 4856 4855 4854 4853 4852 4851 4850 4849 4848

8 JUN 1976

6.7μm

4860 4859 4858 4857 4856 4855 4854 4853 4852 4851 4850 4849 4848

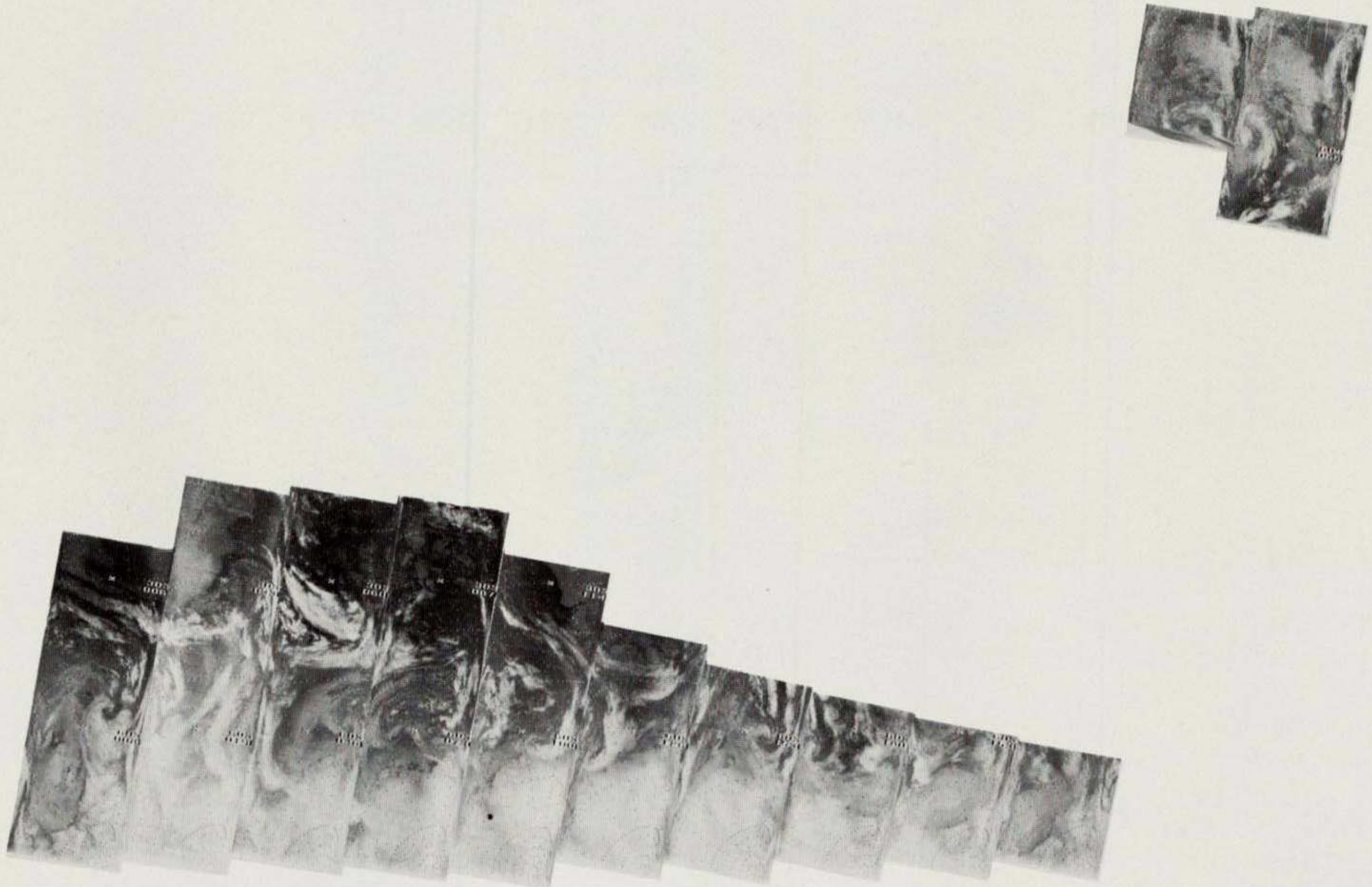
8 JUN 1976

11.5μm

4874 4873 4872 4871 4870 4869 4868 4867 4866 4865 4864 4863 4862 4861

9 JUN 1976

6.7μm



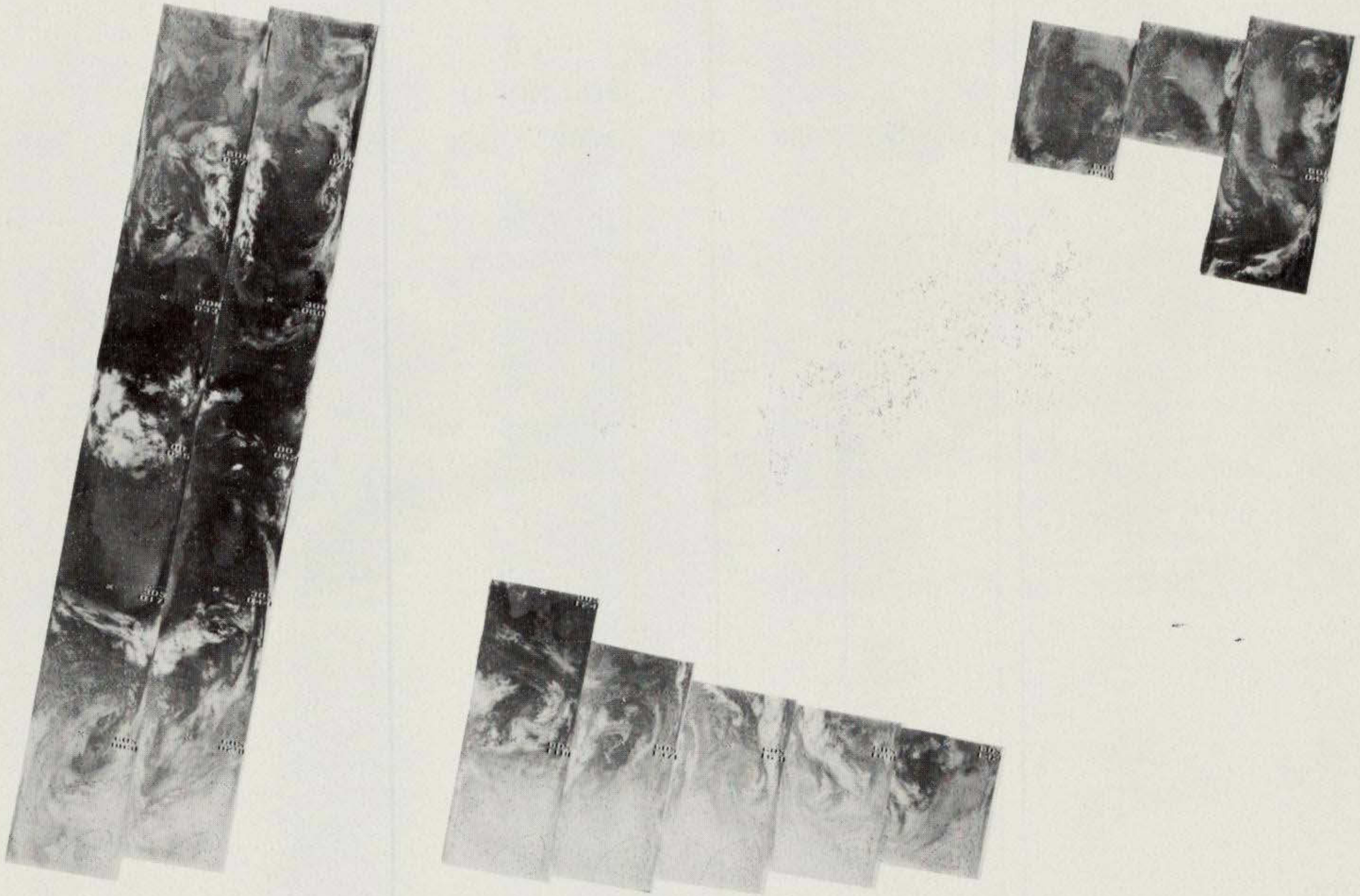
9 JUN 1976

11.5μm

4887 4886 4885 4884 4883 4882 4881 4880 4879 4878 4877 4876 4875

10 JUN 1976

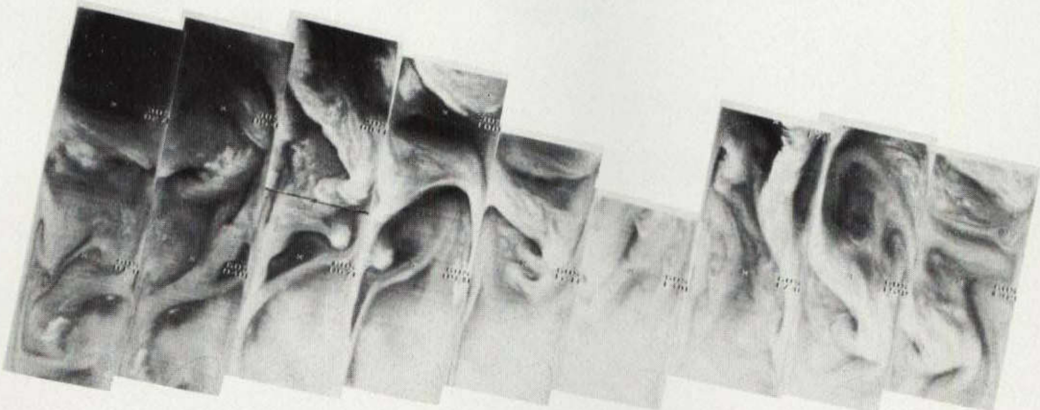
6.7μm



4887 4886 4885 4884 4883 4882 4881 4880 4879 4878 4877 4876 4875

10 JUN 1976

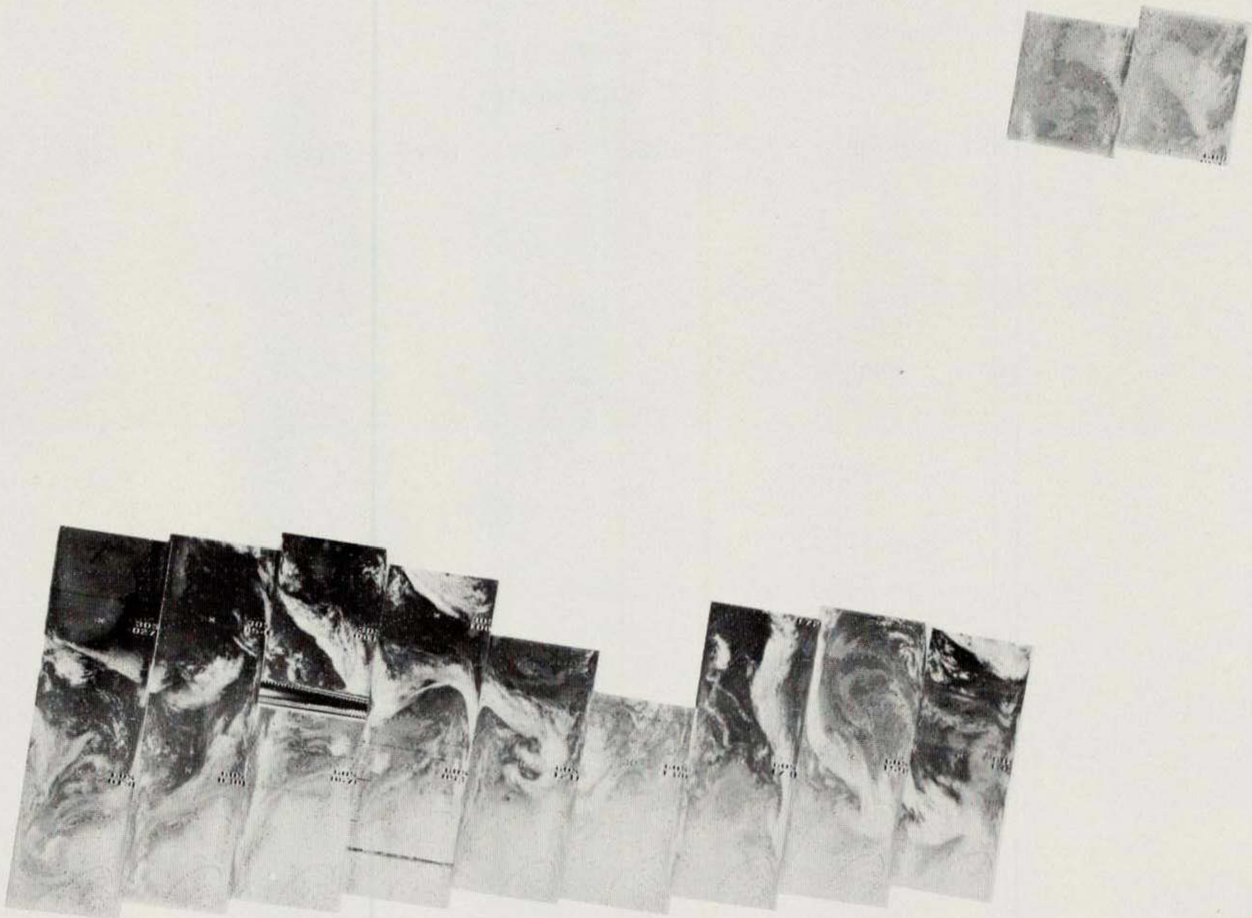
11.5μm



4900 4899 4898 4897 4896 4895 4894 4893 4892 4891 4890 4889 4888

11 JUN 1976

6.7μm



4900 4899 4898 4897 4896 4895 4894 4893 4892 4891 4890 4889 4888

11 JUN 1976

11.5μm

4914 4913 4912 4911 4910 4909 4908 4907 4906 4905 4904 4903 4902 4901

12 JUN 1976

6.7μm

4914 4913 4912 4911 4910 4909 4908 4907 4906 4905 4904 4903 4902 4901

12 JUN 1976

11.5μm

4927 4926 4925 4924 4923 4922 4921 4920 4919 4918 4917 4916 4915

13 JUN 1976

6.7μm

4927 4926 4925 4924 4923 4922 4921 4920 4919 4918 4917 4916 4915

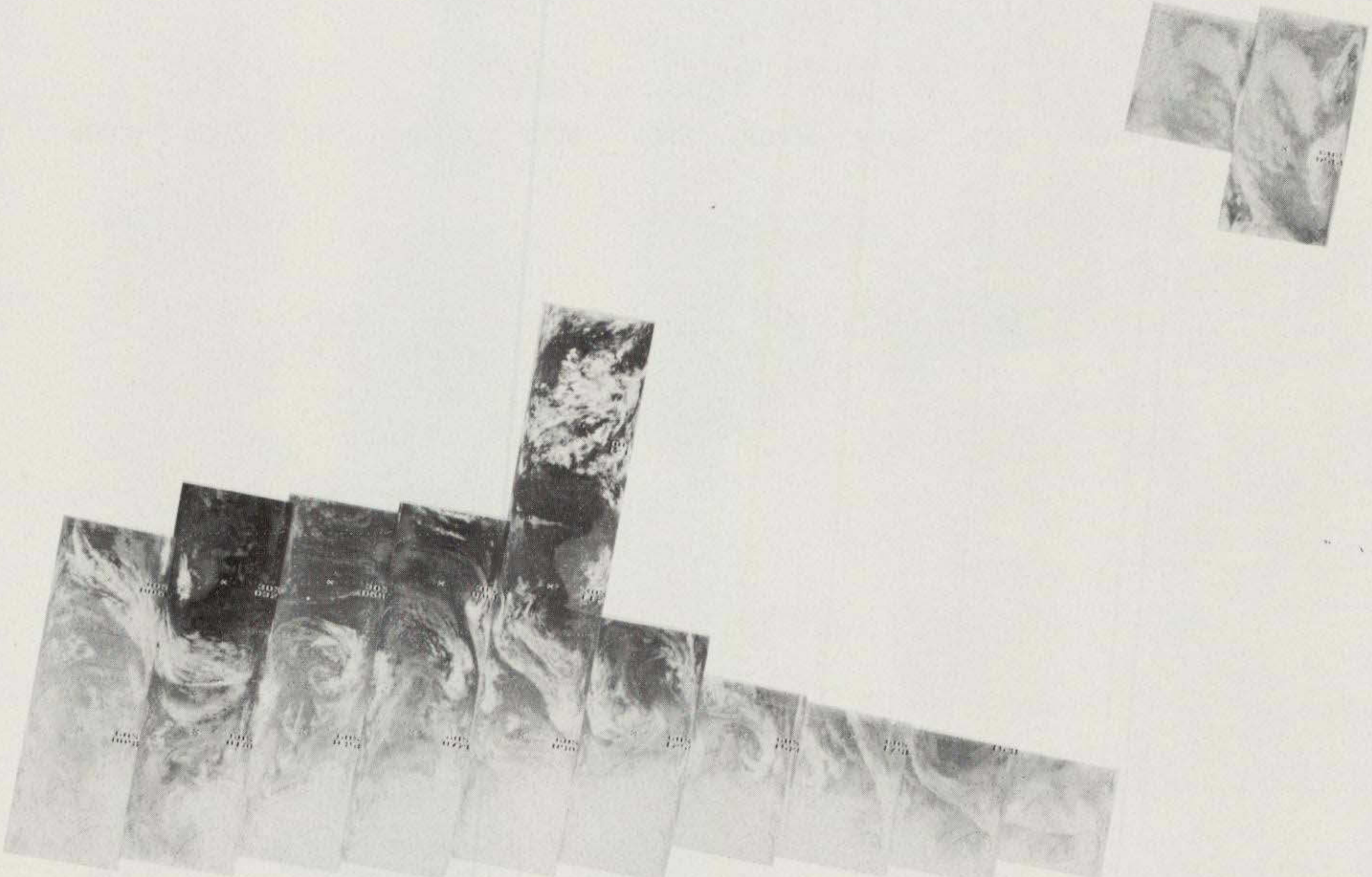
13 JUN 1976

11.5μm

4941 4940 4939 4938 4937 4936 4935 4934 4933 4932 4931 4930 4929 4928

14 JUN 1976

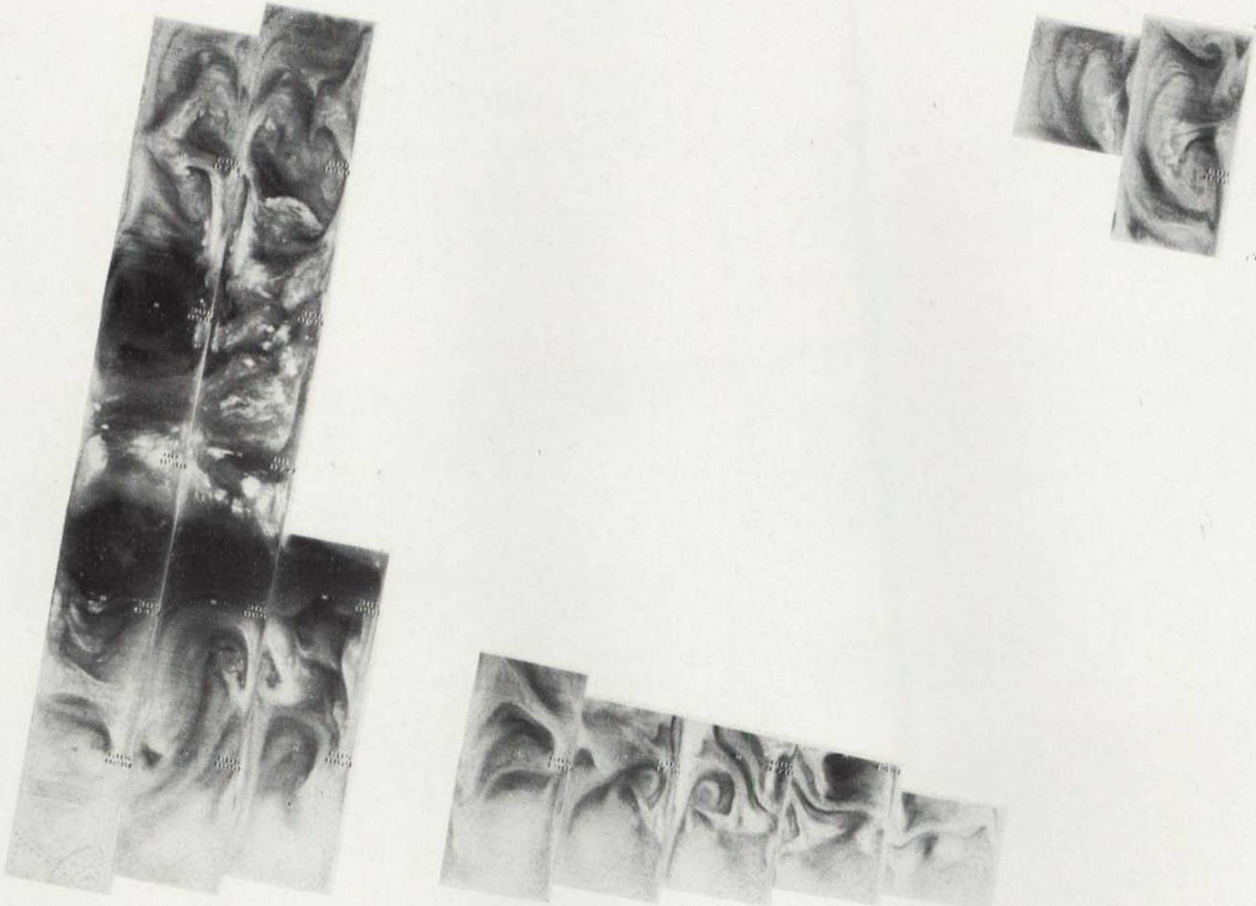
6.7μm



4941 4940 4939 4938 4937 4936 4935 4934 4933 4932 4931 4930 4929 4928

14 JUN 1976

11.5μm



4954 4953 4952 4951 4950 4949 4948 4947 4946 4945 4944 4943 4942

15 JUN 1976

6.7μm

4954 4953 4952 4951 4950 4949 4948 4947 4946 4945 4944 4943 4942

15 JUN 1976

11.5μm

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4967 4966 4965 4964 4963 4962 4961 4960 4959 4958 4957 4956 4955

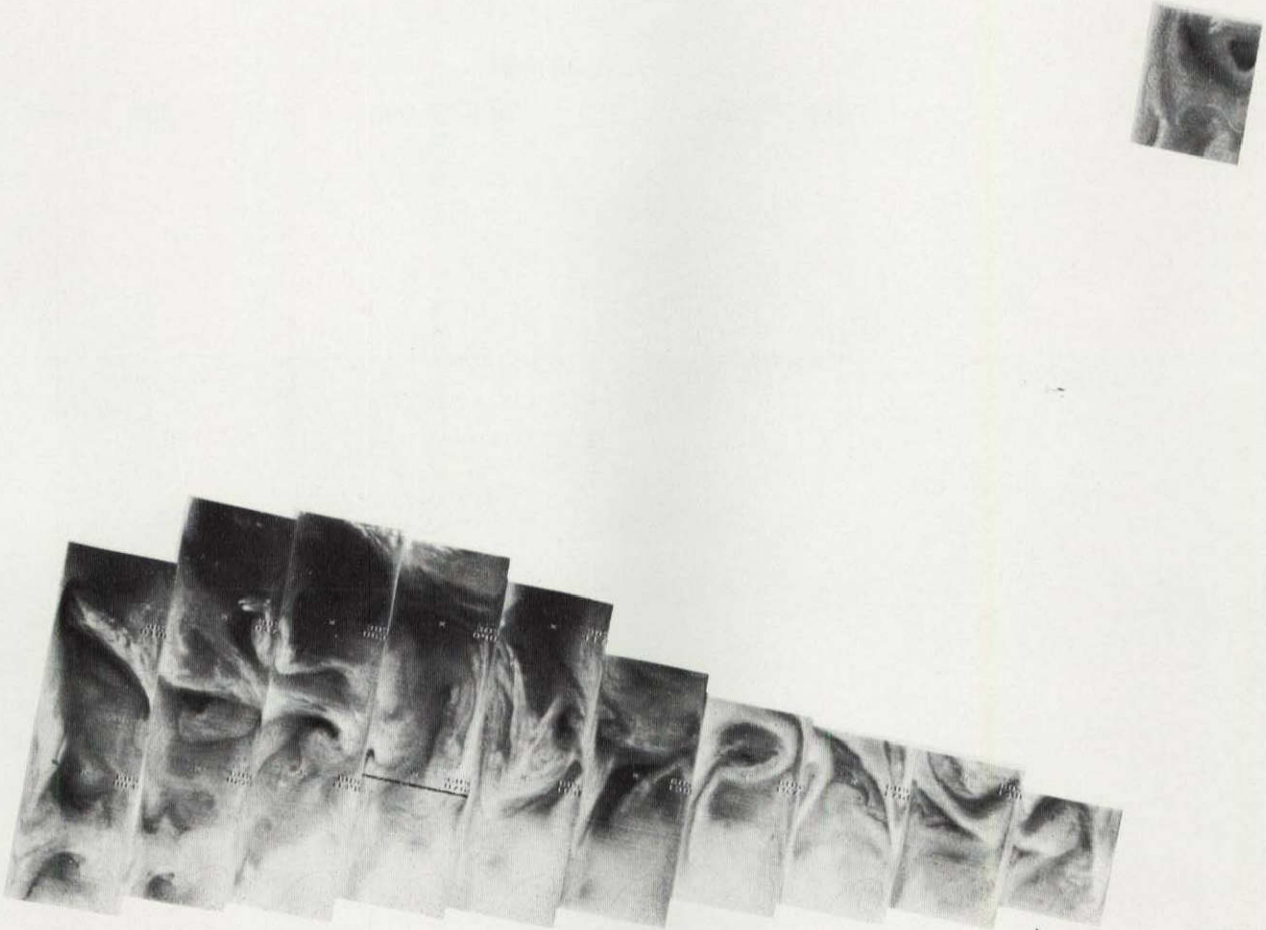
16 JUN 1976

6.7μm

4967 4966 4965 4964 4963 4962 4961 4960 4959 4958 4957 4956 4955

16 JUN 1976

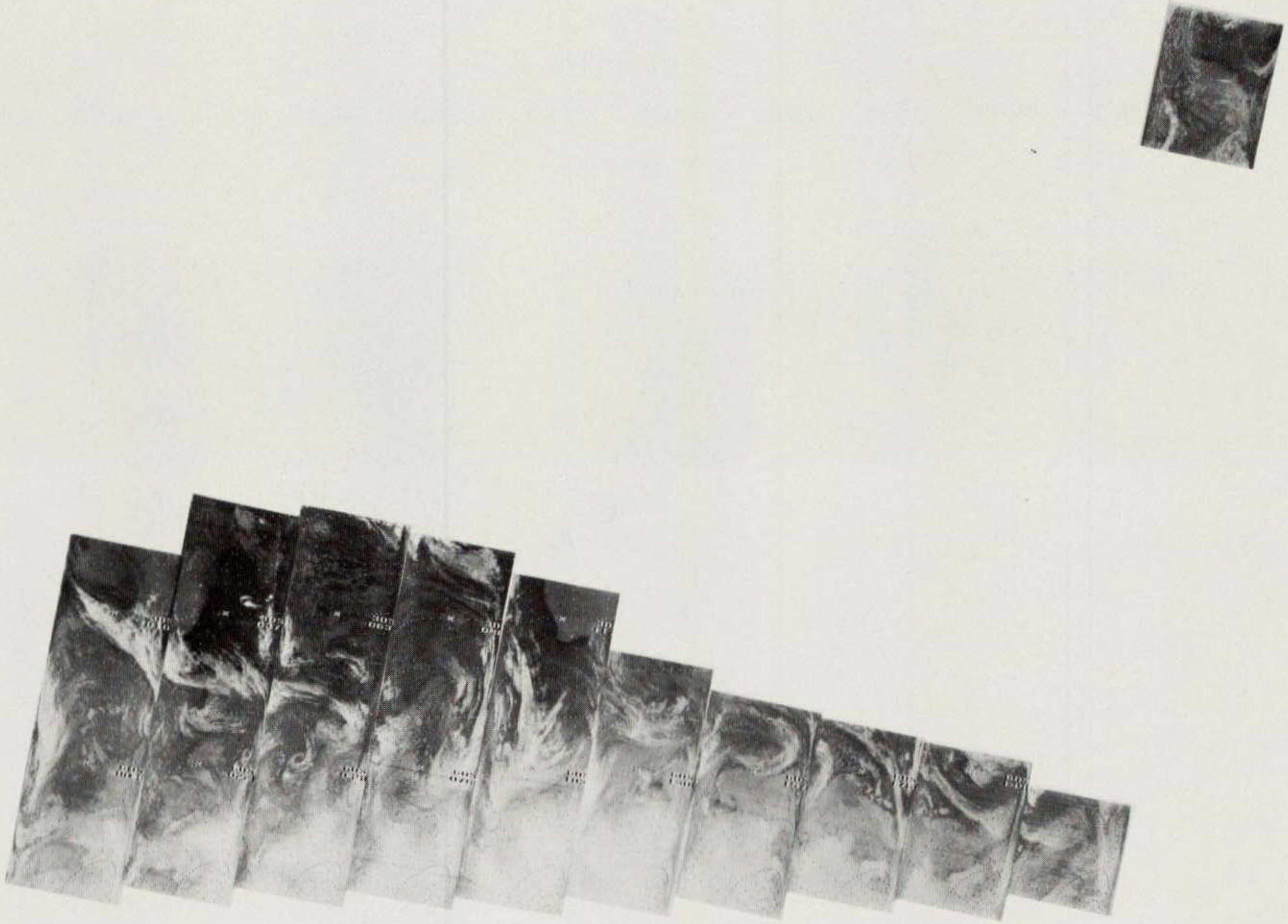
11.5μm



4981 4980 4979 4978 4977 4976 4975 4974 4973 4972 4971 4970 4969 4968

17 JUN 1976

6.7μm



4981 4980 4979 4978 4977 4976 4975 4974 4973 4972 4971 4970 4969 4968

17 JUN 1976

11.5μm

4994 4993 4992 4991 4990 4989 4988 4987 4986 4985 4984 4983 4982

18 JUN 1976

6.7μm

4994 4993 4992 4991 4990 4989 4988 4987 4986 4985 4984 4983 4982

18 JUN 1976

11.5μm

5008 5007 5006 5005 5004 5003 5002 5001 5000 4999 4998 4997 4996 4995

19 JUN 1976

6.7μm

5008 5007 5006 5005 5004 5003 5002 5001 5000 4999 4998 4997 4996 4995

19 JUN 1976

11.5μm

5021 5020 5019 5018 5017 5016 5015 5014 5013 5012 5011 5010 5009

20 JUN 1976

6.7μm

5021 5020 5019 5018 5017 5016 5015 5014 5013 5012 5011 5010 5009

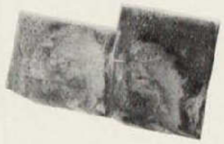
20 JUN 1976

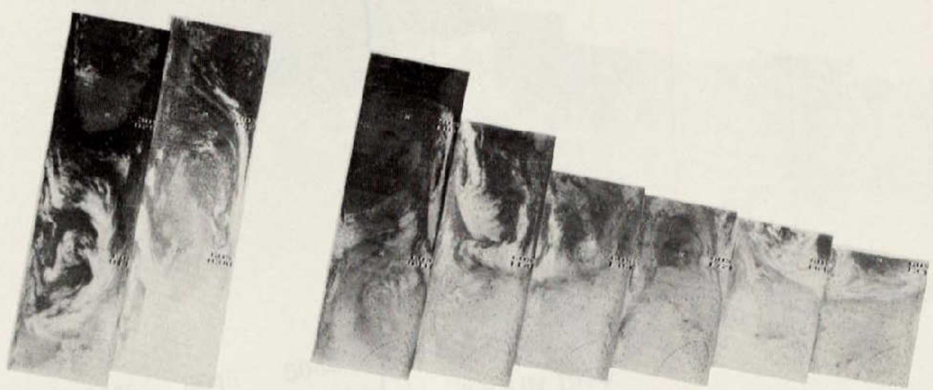
11.5μm

5034 5033 5032 5031 5030 5029 5028 5027 5026 5025 5024 5023 5022

21 JUN 1976

6.7μm





5034 5033 5032 5031 5030 5029 5028 5027 5026 5025 5024 5023 5022

21 JUN 1976

11.5μm

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5061 5060 5059 5058 5057 5056 5055 5054 5053 5052 5051 5050 5049

23 JUN 1976

6.7μm

5061 5060 5059 5058 5057 5056 5055 5054 5053 5052 5051 5050 5049

23 JUN 1976

$11.5 \mu m$

5075 5074 5073 5072 5071 5070 5069 5068 5067 5066 5065 5064 5063 5062

24 JUN 1976

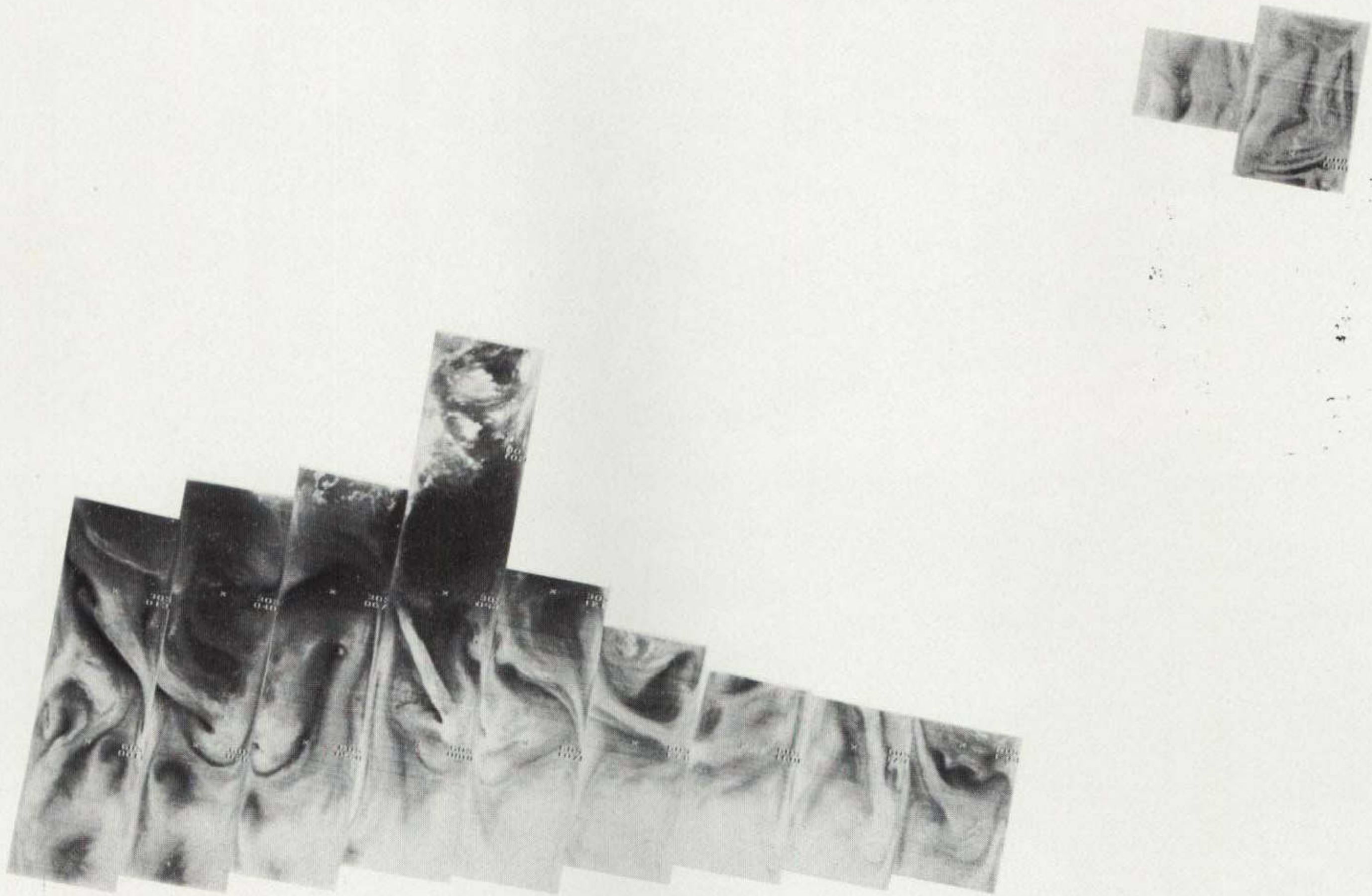
6.7μm

C-3

5075 5074 5073 5072 5071 5070 5069 5068 5067 5066 5065 5064 5063 5062

24 JUN 1976

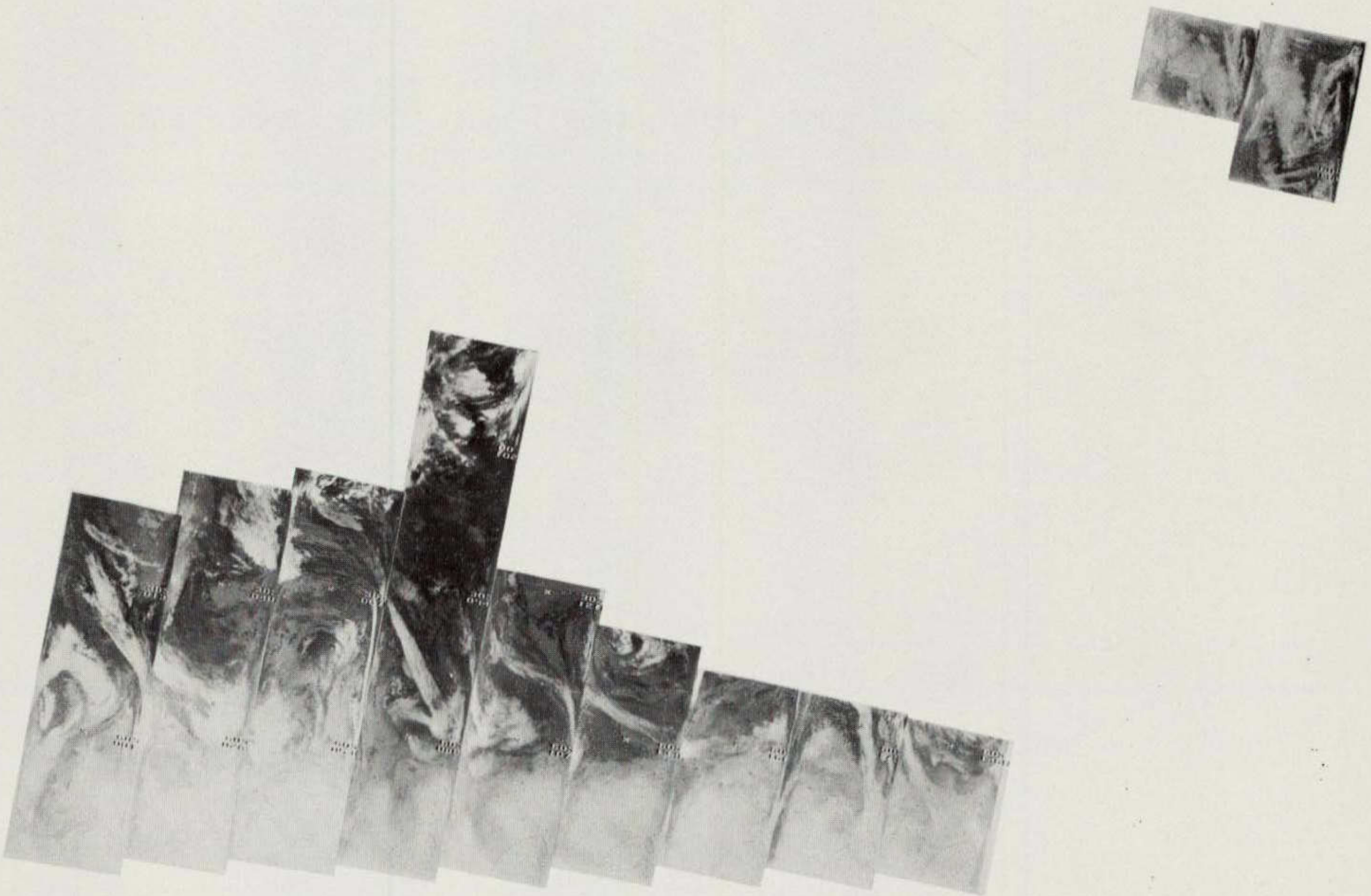
11.5μm



5088 5087 5086 5085 5084 5083 5082 5081 5080 5079 5078 5077 5076

25 JUN 1976

6.7μm



5088 5087 5086 5085 5084 5083 5082 5081 5080 5079 5078 5077 5076

25 JUN 1976

11.5μm

5101 5100 5099 5098 5097 5096 5095 5094 5093 5092 5091 5090 5089

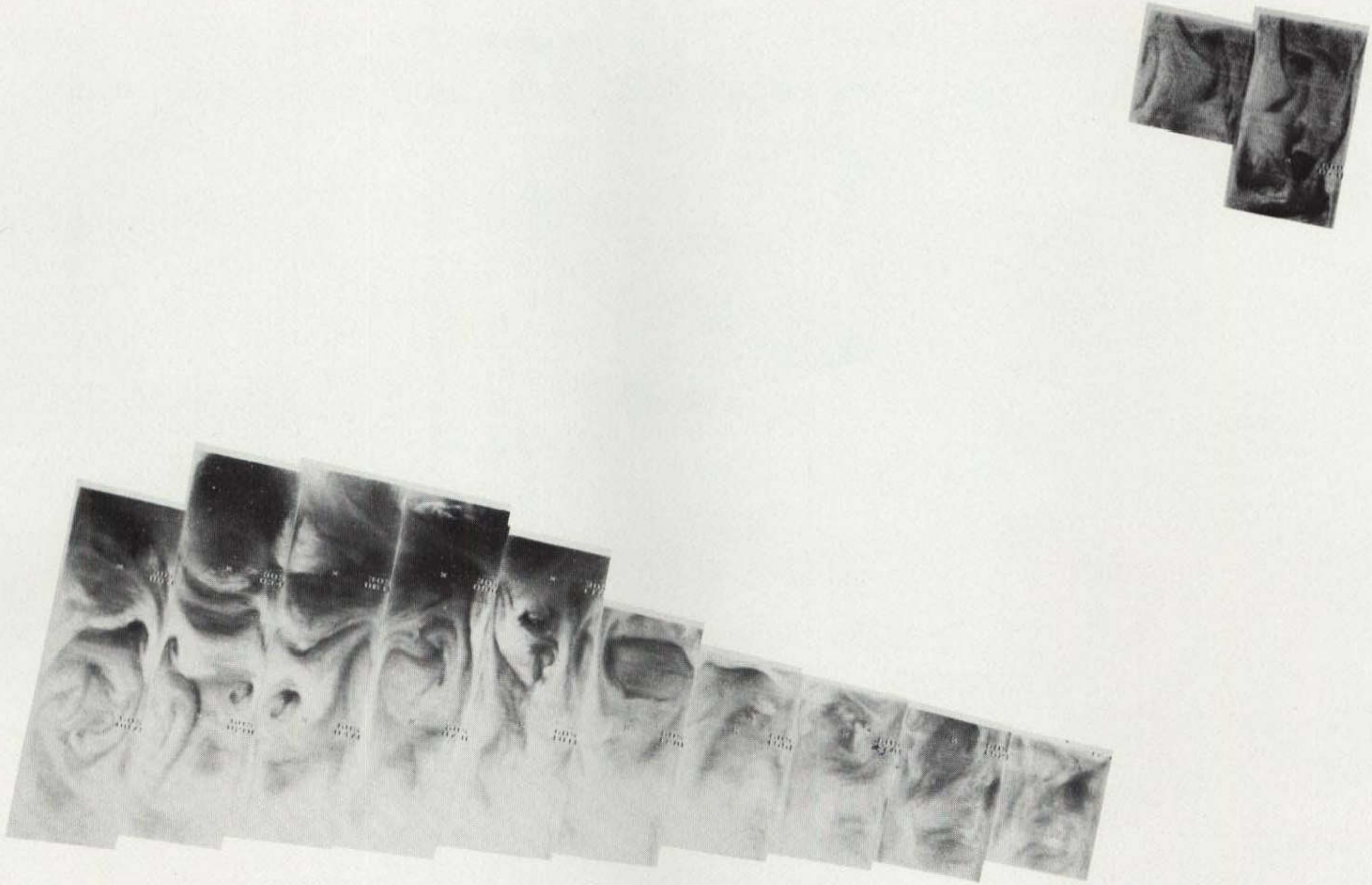
26 JUN 1976

6.7μm

5101 5100 5099 5098 5097 5096 5095 5094 5093 5092 5091 5090 5089

26 JUN 1976

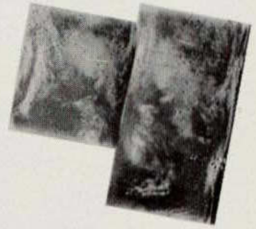
11.5μm



5115 5114 5113 5112 5111 5110 5109 5108 5107 5106 5105 5104 5103 5102

27 JUN 1976

6.7μm



5115 5114 5113 5112 5111 5110 5109 5108 5107 5106 5105 5104 5103 5102

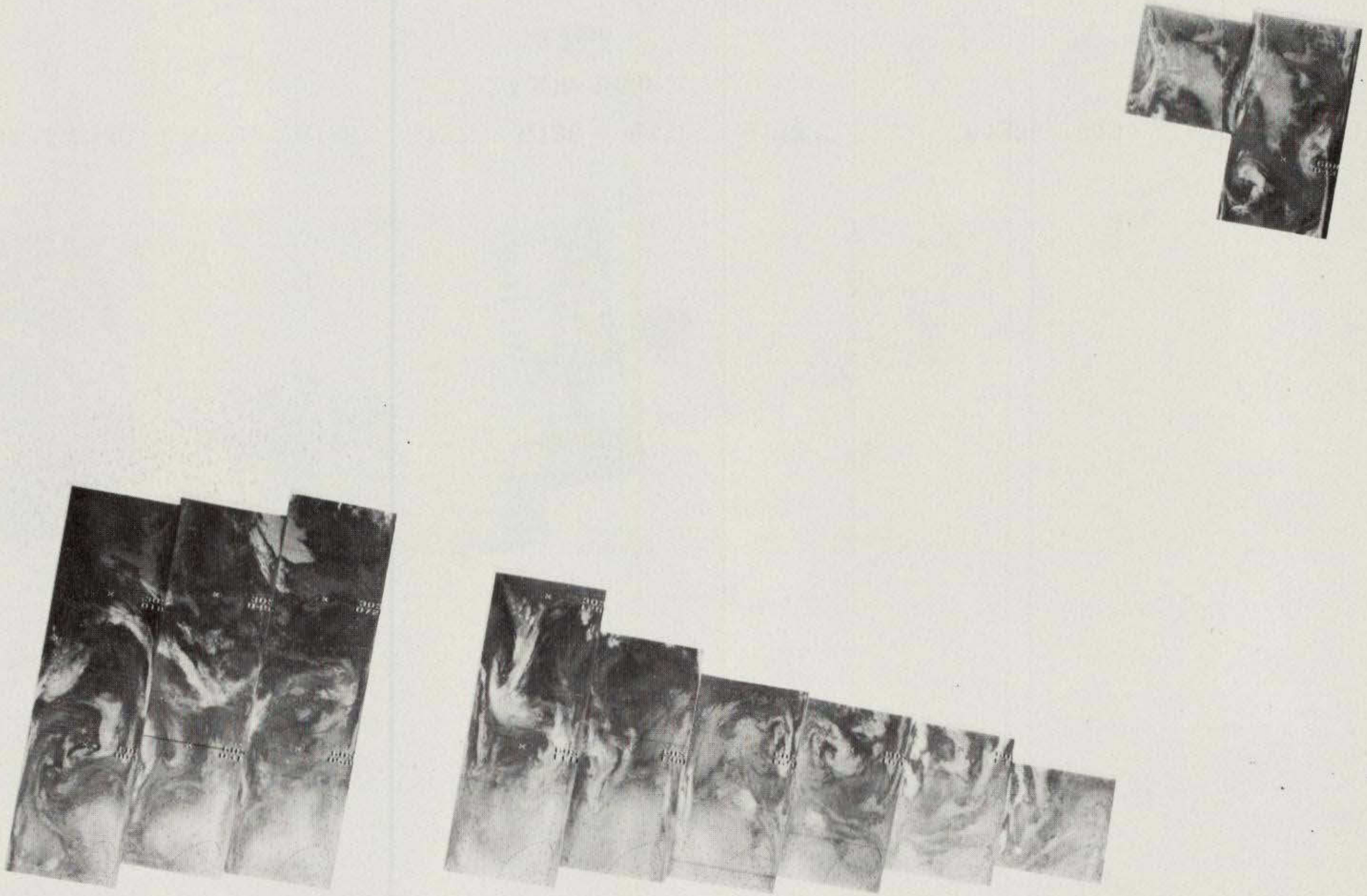
27 JUN 1976

11.5μm

5128 5127 5126 5125 5124 5123 5122 5121 5120 5119 5118 5117 5116

28 JUN 1976

6.7μm



5128 5127 5126 5125 5124 5123 5122 5121 5120 5119 5118 5117 5116

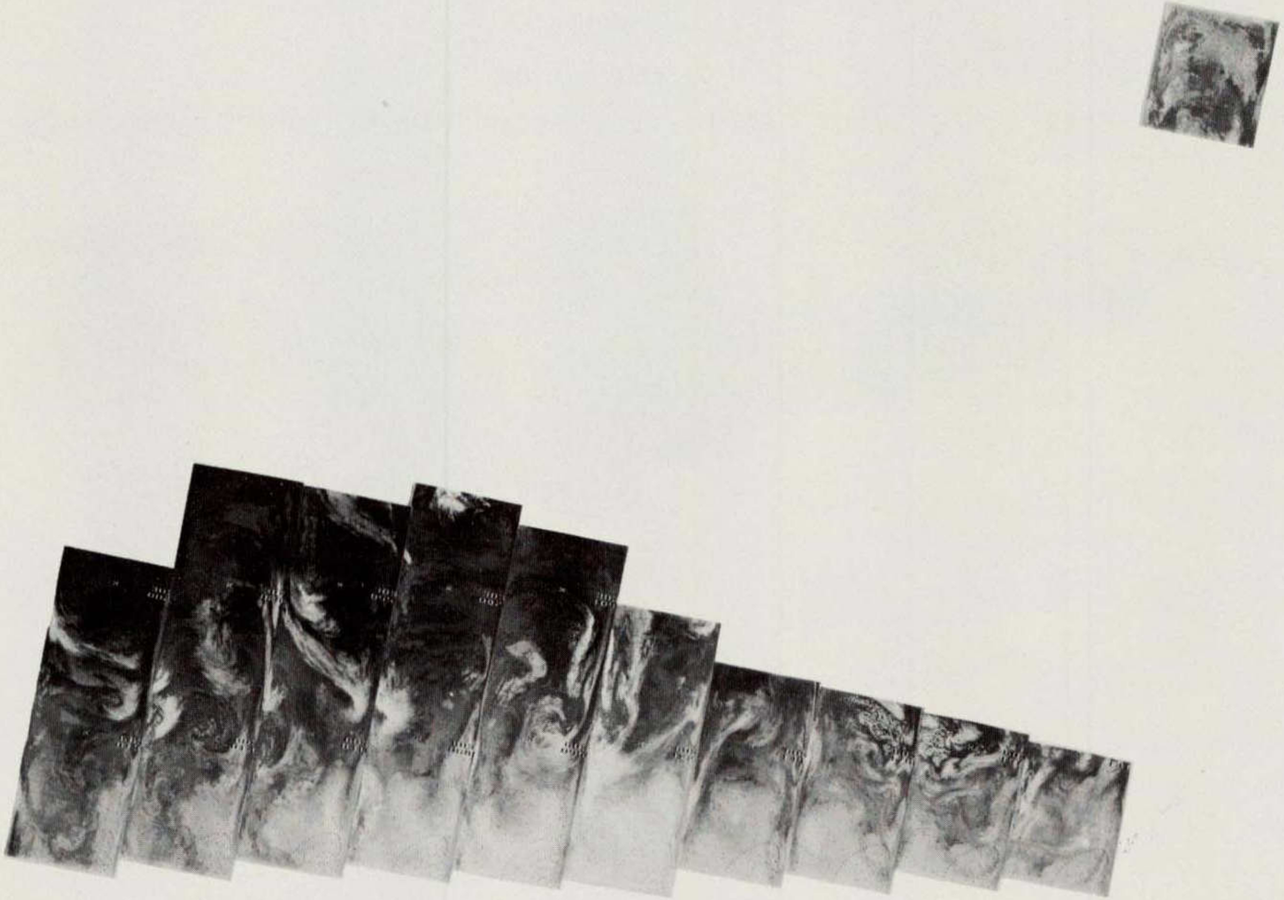
28 JUN 1976

11.5μm

5142 5141 5140 5139 5138 5137 5136 5135 5134 5133 5132 5131 5130 5129

29 JUN 1976

6.7μm



5142 5141 5140 5139 5138 5137 5136 5135 5134 5133 5132 5131 5130 5129

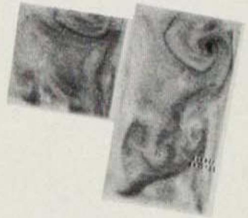
29 JUN 1976

11.5μm

5155 5154 5153 5152 5151 5150 5149 5148 5147 5146 5145 5144 5143

30 JUN 1976

6.7μm



5155 5154 5153 5152 5151 5150 5149 5148 5147 5146 5145 5144 5143

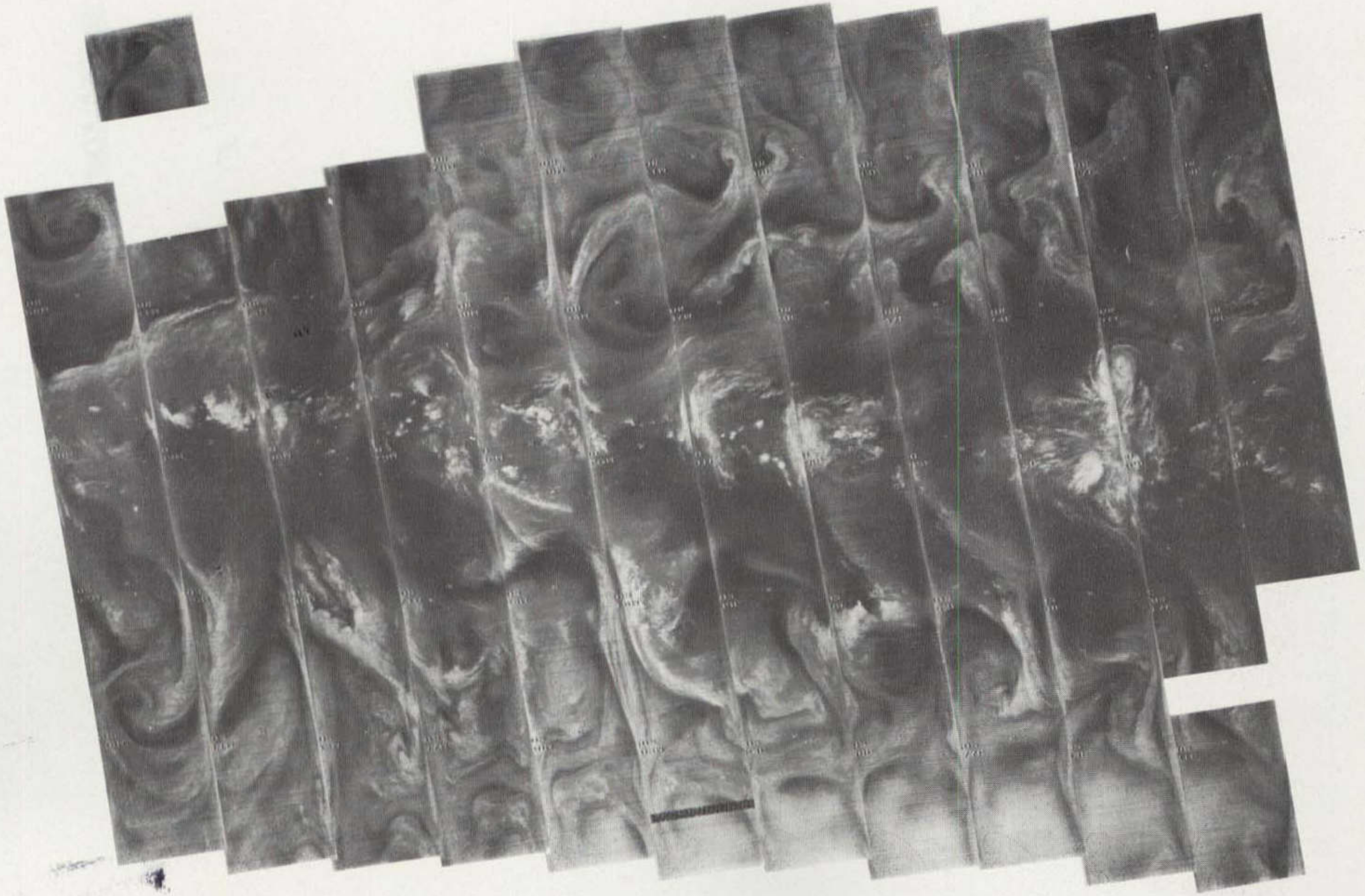
30 JUN 1976

11.5μm

SECTION 4.2

TEMPERATURE HUMIDITY INFRARED RADIOMETER

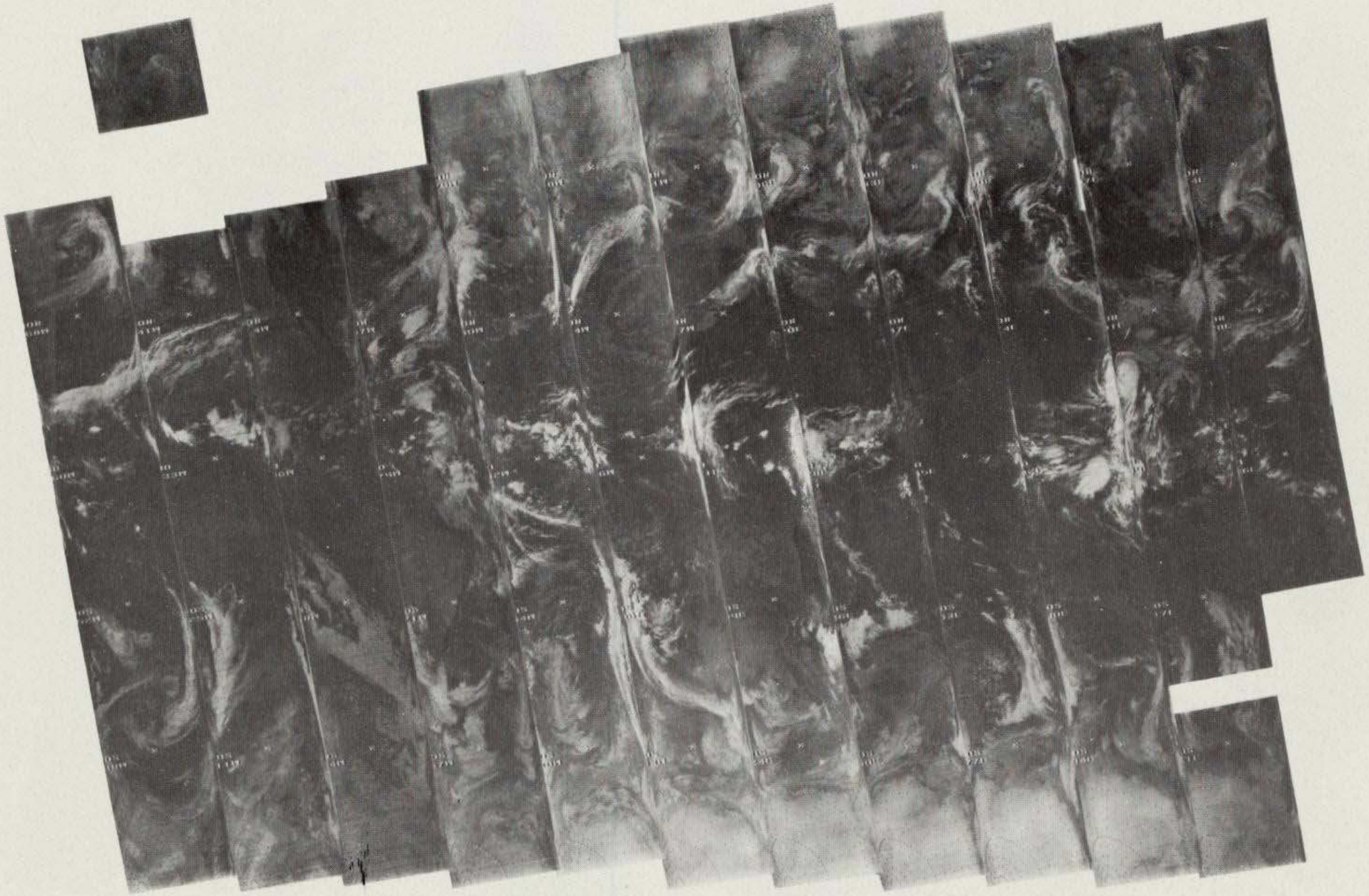
DAYTIME MONTAGES



4351 4350 4349 4348 4347 4346 4345 4344 4343 4342 4341 4340 4339

1 MAY 1976

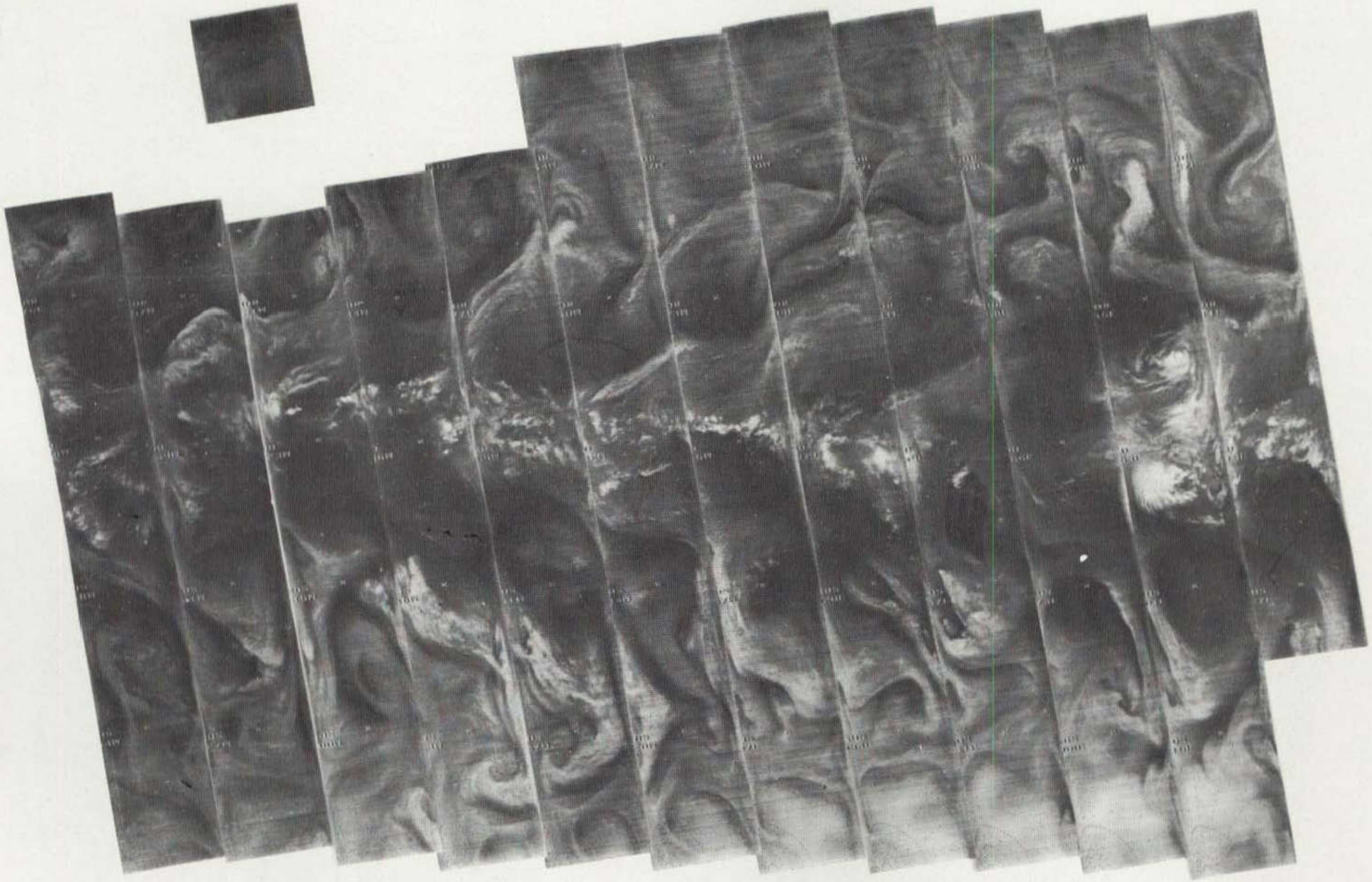
6.7μm



4351 4350 4349 4348 4347 4346 4345 4344 4343 4342 4341 4340 4339

1 MAY 1976

11.5μm



4365 4364 4363 4362 4361 4360 4359 4358 4357 4356 4355 4354 4353 4352

2 MAY 1976

6.7μm

4365 4364 4363 4362 4361 4360 4359 4358 4357 4356 4355 4354 4353 4352

2 MAY 1976

11.5μm

4378 4377 4376 4375 4374 4373 4372 4371 4370 4369 4368 4367 4366

3 MAY 1976

6.7μm

4378 4377 4376 4375 4374 4373 4372 4371 4370 4369 4368 4367 4366

3 MAY 1976

11.5μm

4392 4391 4390 4389 4388 4387 4386 4385 4384 4383 4382 4381 4380 4379

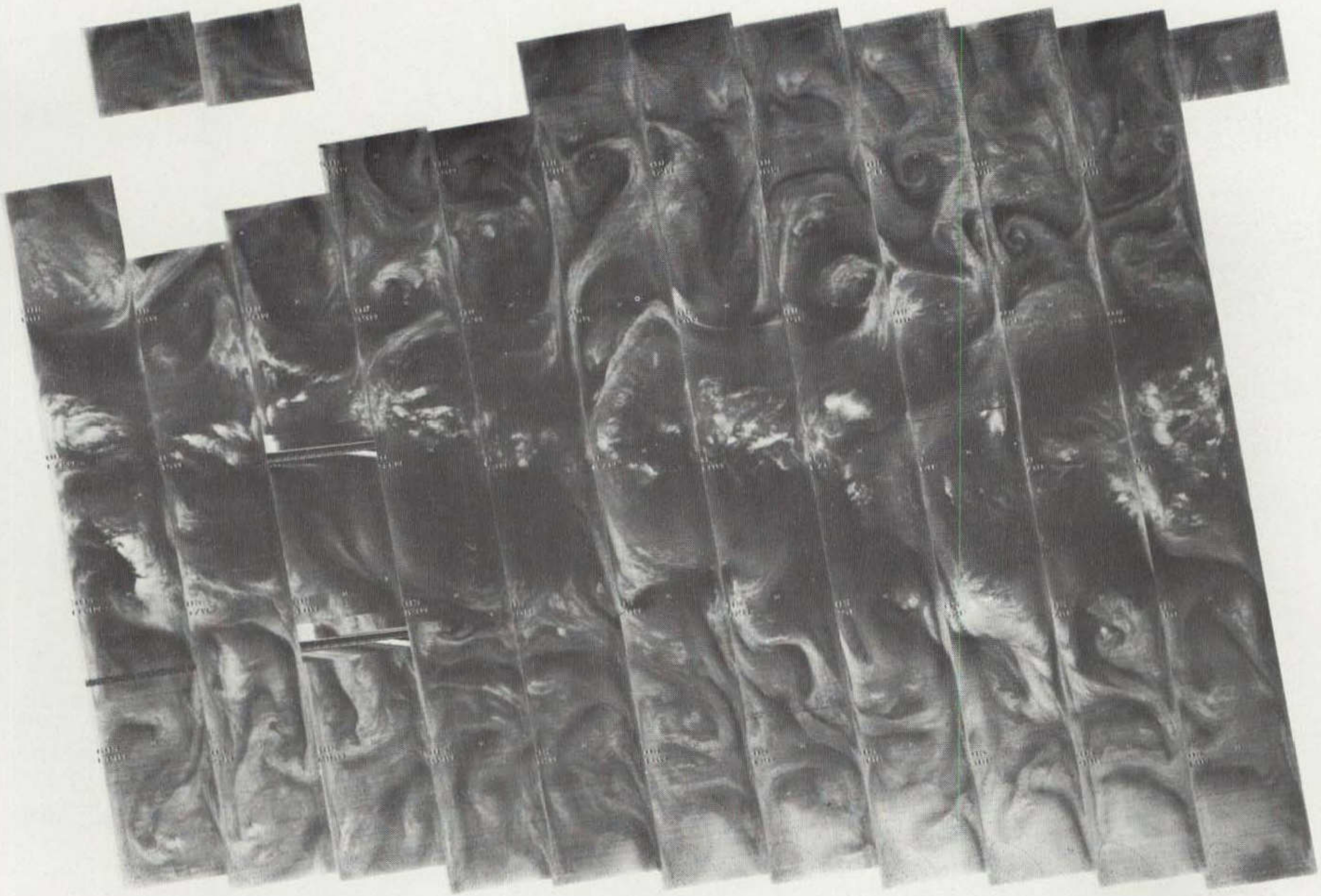
4 MAY 1976

6.7μm

4392 4391 4390 4389 4388 4387 4386 4385 4384 4383 4382 4381 4380 4379

4 MAY 1976

11.5μm



4405 4404 4403 4402 4401 4400 4399 4398 4397 4396 4395 4394 4393

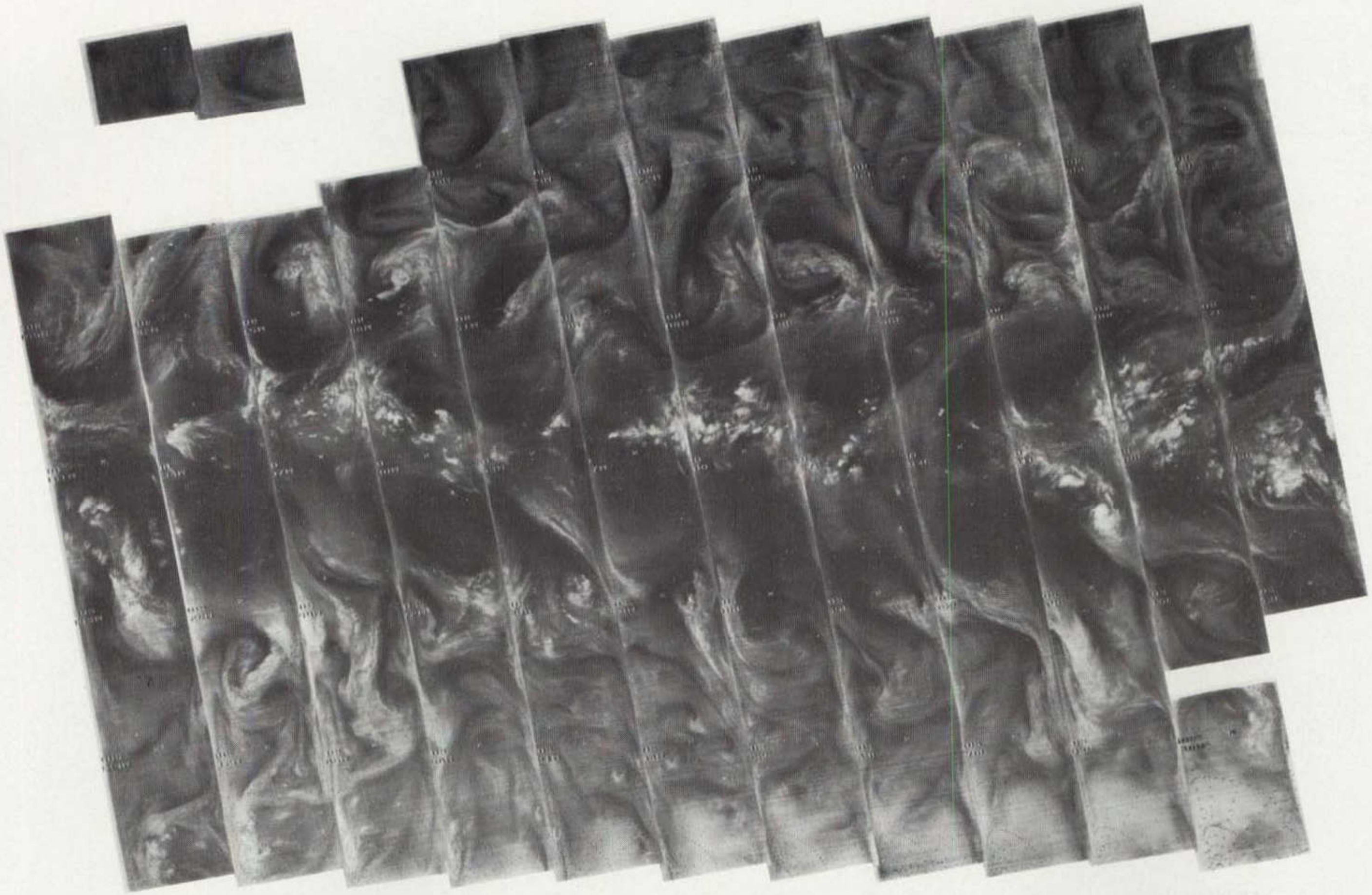
5 MAY 1976

6.7μm

4405 4404 4403 4402 4401 4400 4399 4398 4397 4396 4395 4394 4393

5 MAY 1976

11.5μm



4418 4417 4416 4415 4414 4413 4412 4411 4410 4409 4408 4407 4406

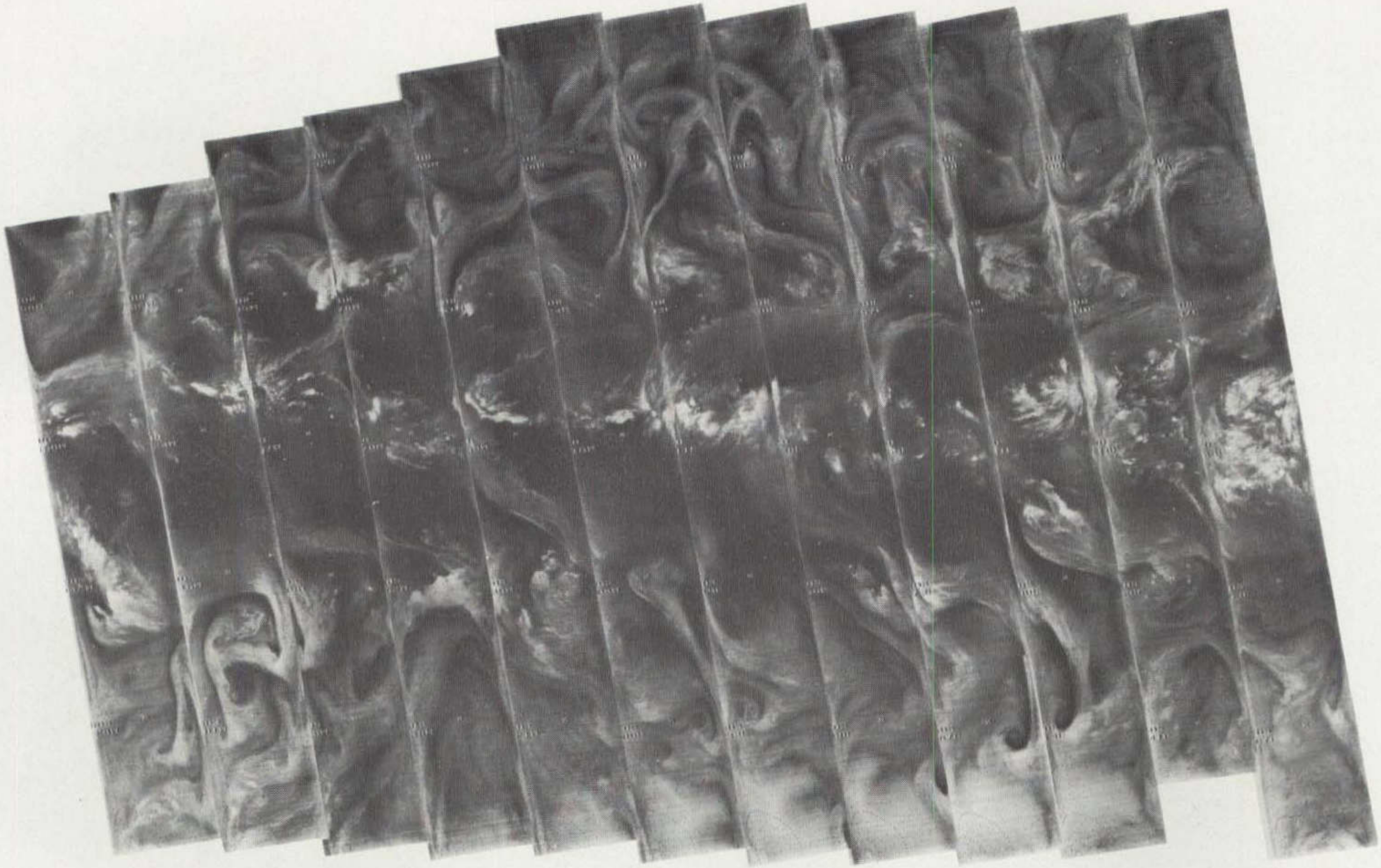
6 MAY 1976

6.7μm

4418 4417 4416 4415 4414 4413 4412 4411 4410 4409 4408 4407 4406

6 MAY 1976

11.5μm



4432 4431 4430 4429 4428 4427 4426 4425 4424 4423 4422 4421 4420 4419

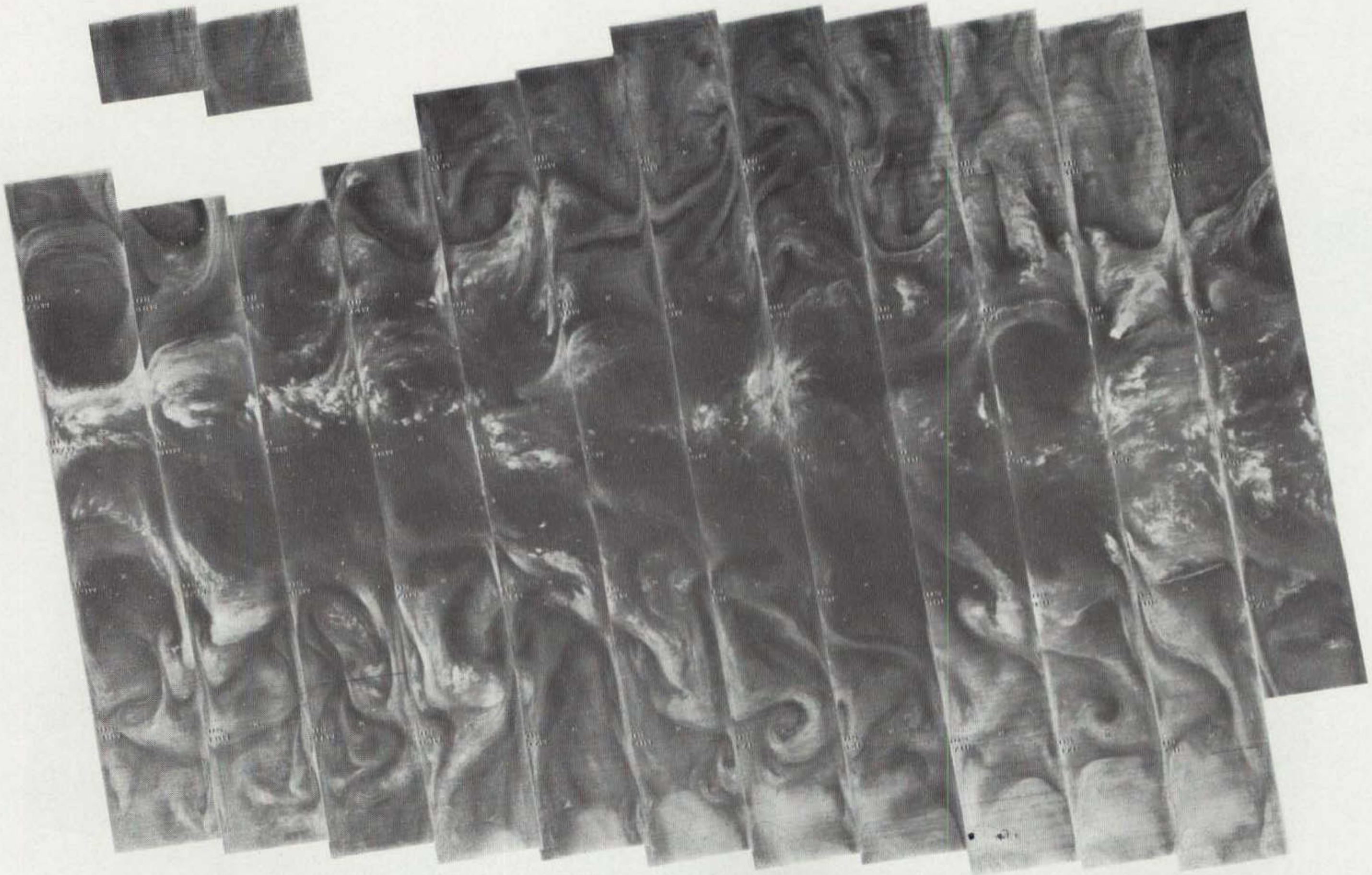
7 MAY 1976

6.7μm

4432 4431 4430 4429 4428 4427 4426 4425 4424 4423 4422 4421 4420 4419

7 MAY 1976

11.5μm



4445 4444 4443 4442 4441 4440 4439 4438 4437 4436 4435 4434 4433

8 MAY 1976

6.7μm

4445 4444 4443 4442 4441 4440 4439 4438 4437 4436 4435 4434 4433

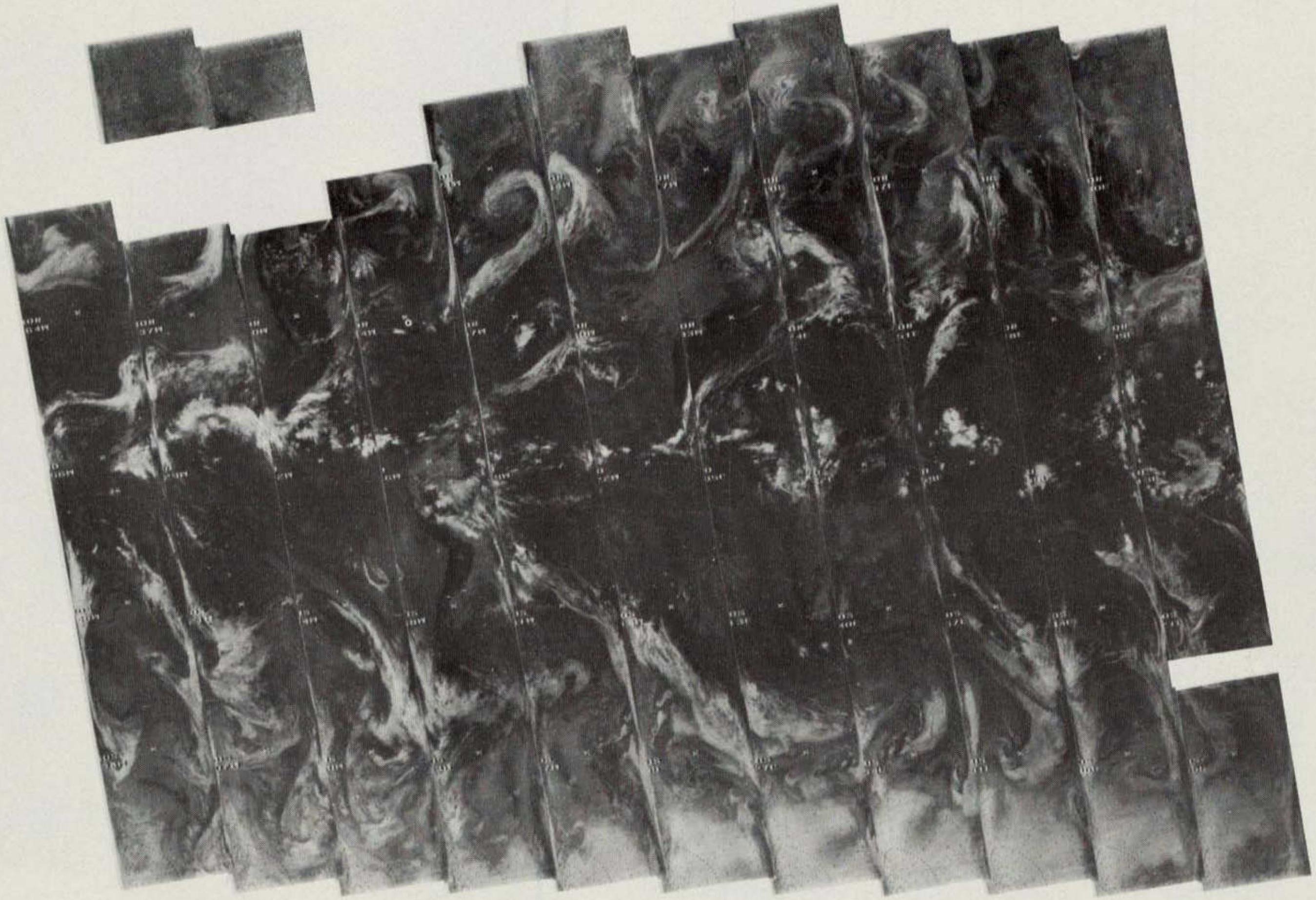
8 MAY 1976

11.5μm

4459 4458 4457 4456 4455 4454 4453 4452 4451 4450 4449 4448 4447 4446

9 MAY 1976

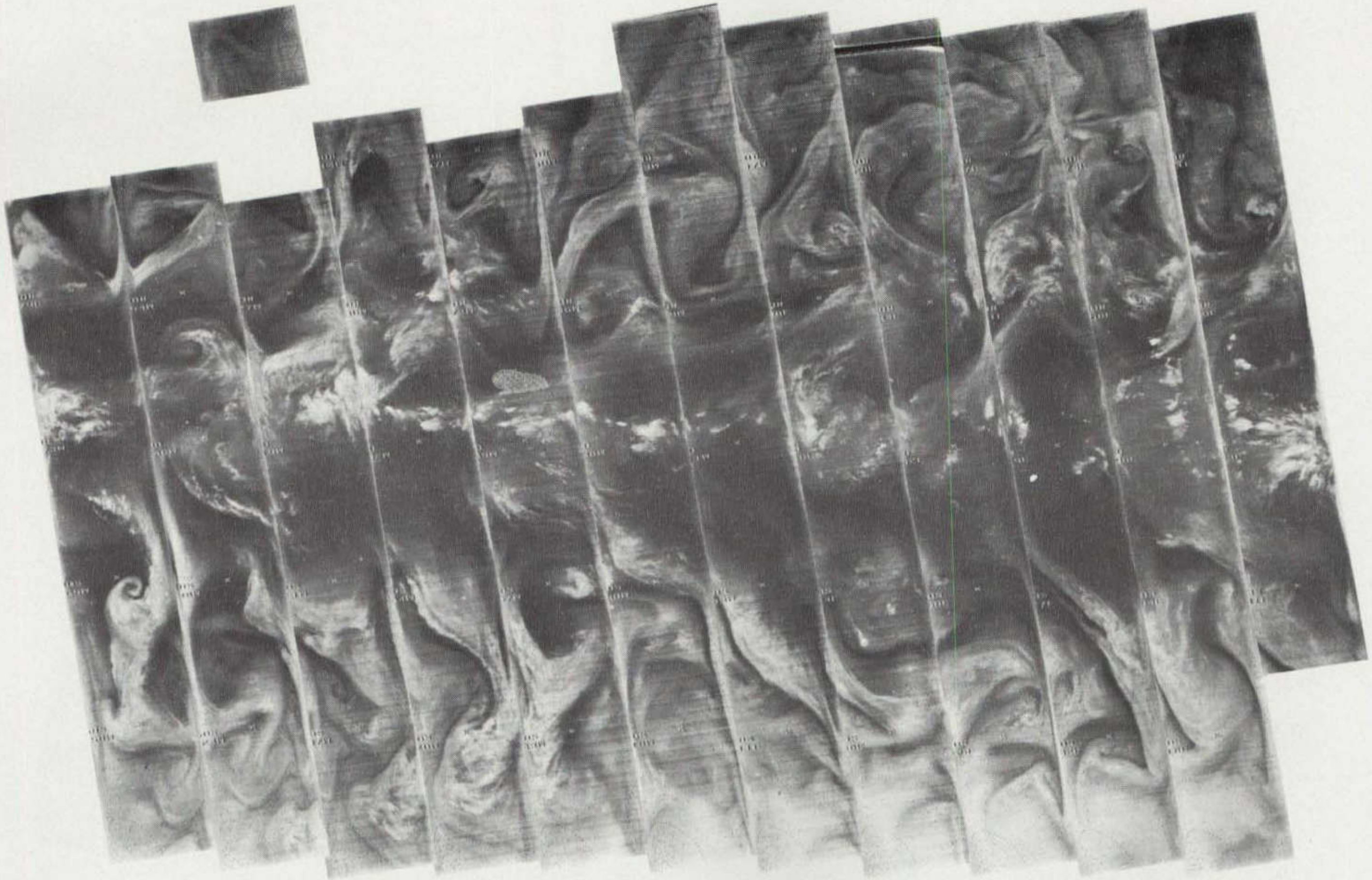
6.7μm



4459 4458 4457 4456 4455 4454 4453 4452 4451 4450 4449 4448 4447 4446

9 MAY 1976

11.5μm



4472 4471 4470 4469 4468 4467 4466 4465 4464 4463 4462 4461 4460

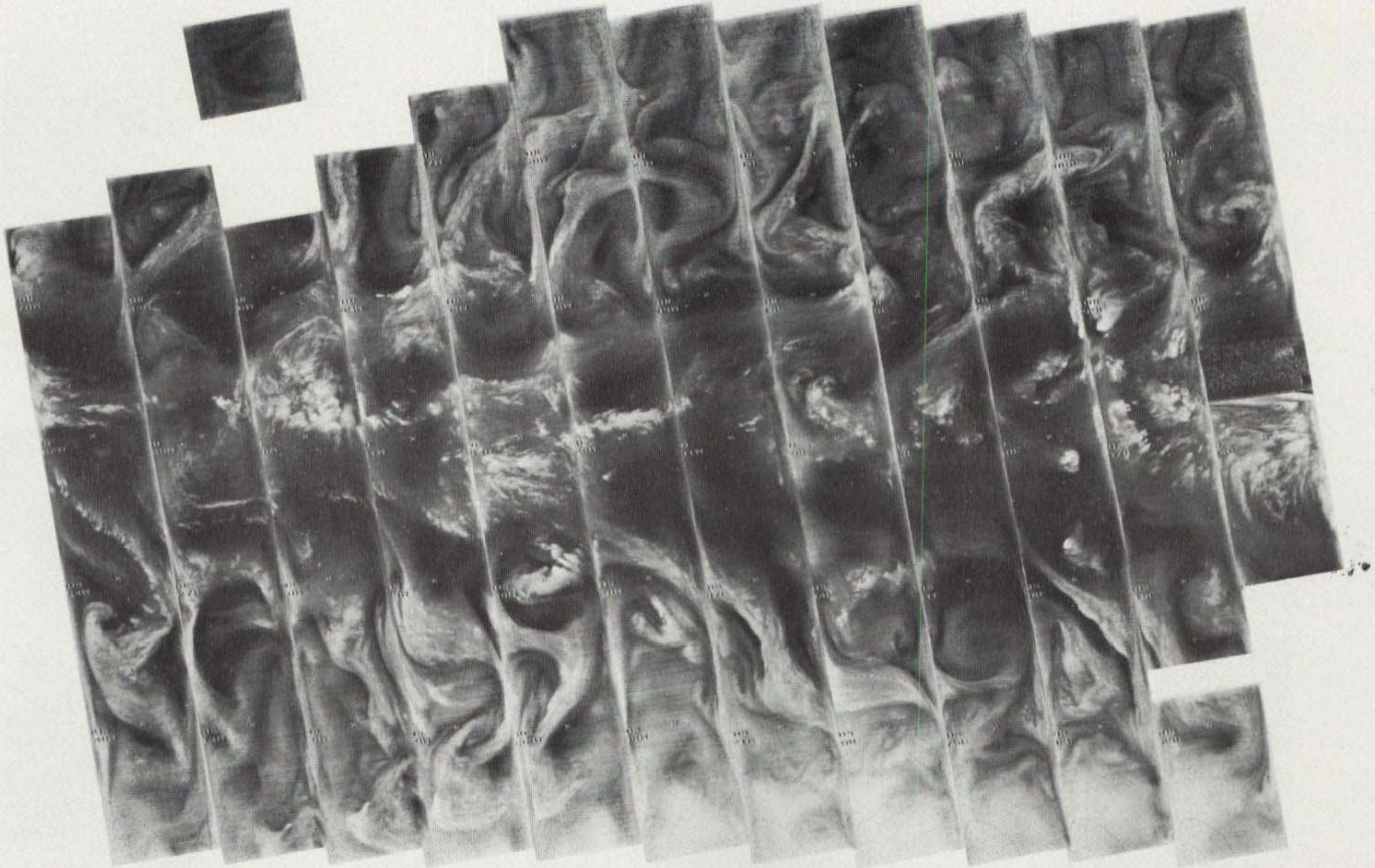
10 MAY 1976

6.7μm

4472 4471 4470 4469 4468 4467 4466 4465 4464 4463 4462 4461 4460

10 MAY 1976

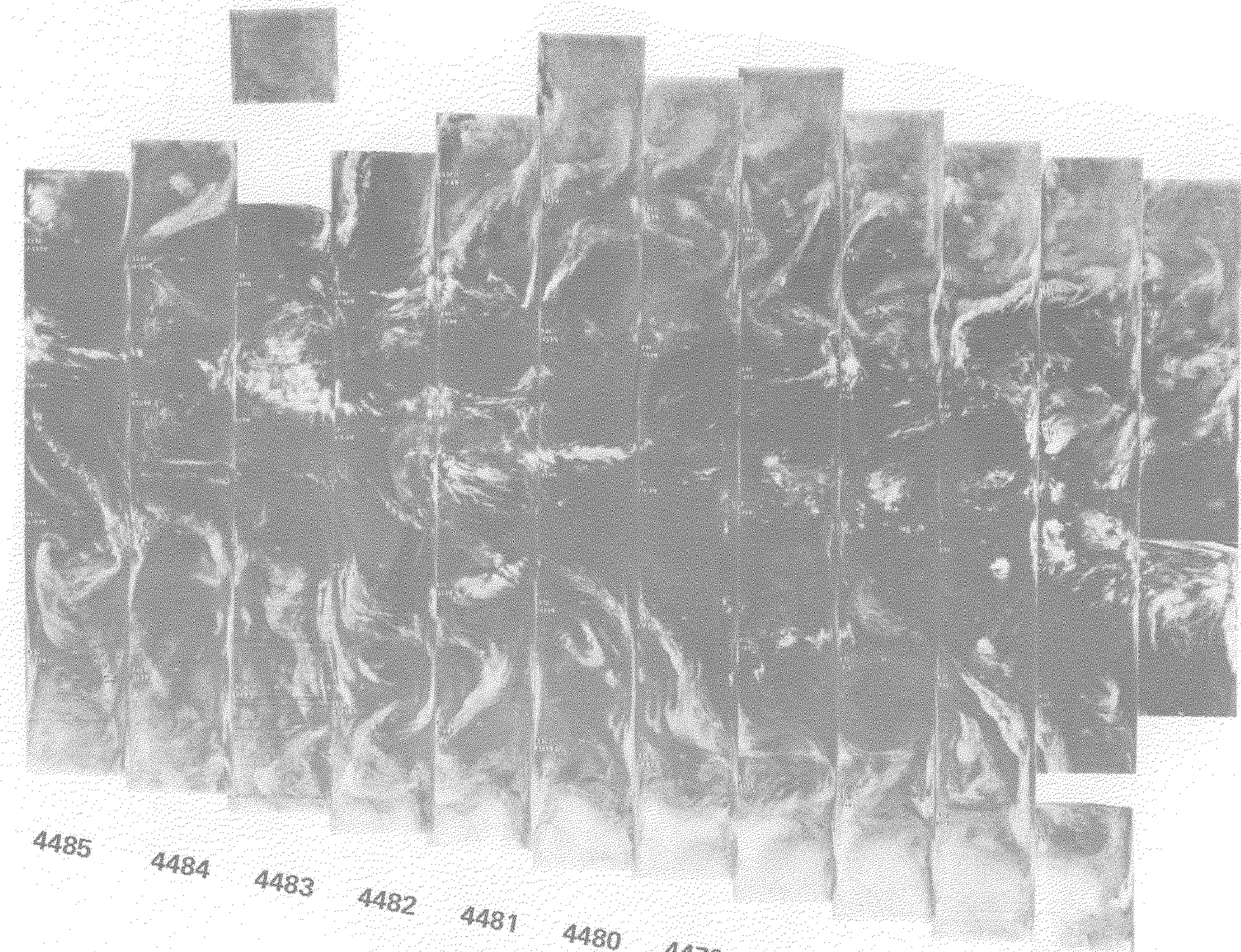
11.5μm



4485 4484 4483 4482 4481 4480 4479 4478 4477 4476 4475 4474 4473

11 MAY 1976

6.7μm



4485 4484 4483 4482 4481 4480 4479 4478 4477 4476 4475 4474 4473

11 MAY 1976

11.5μm

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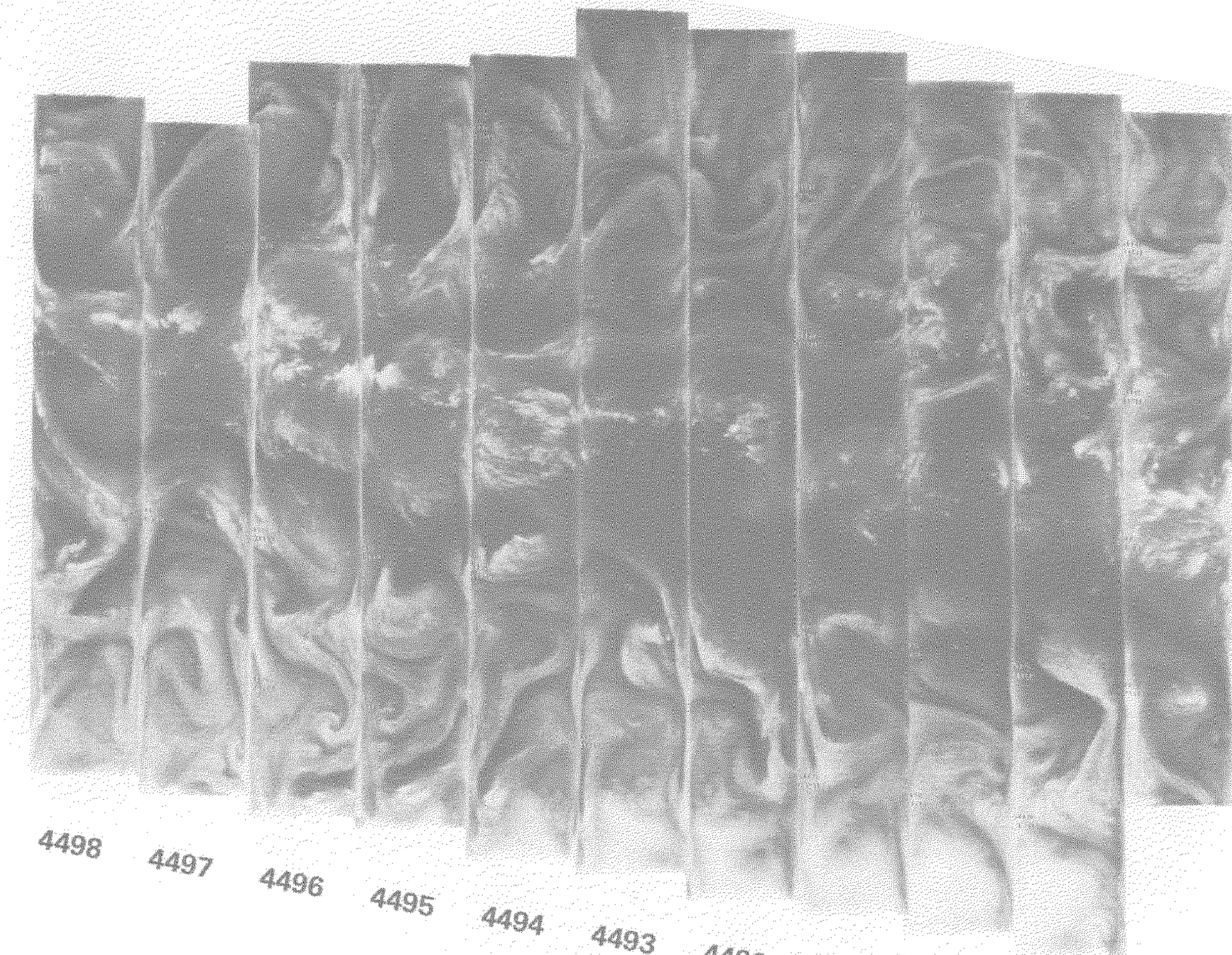
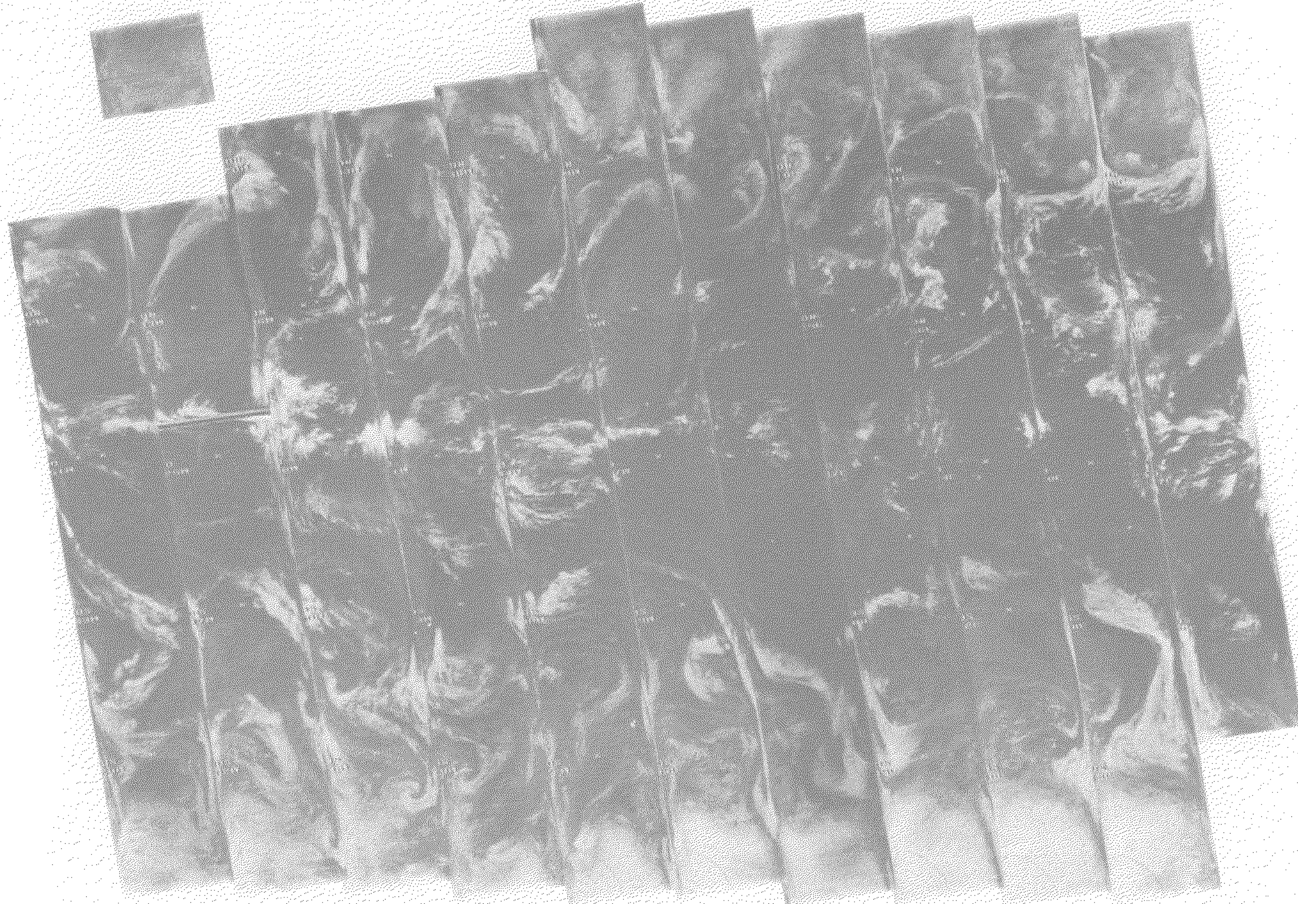


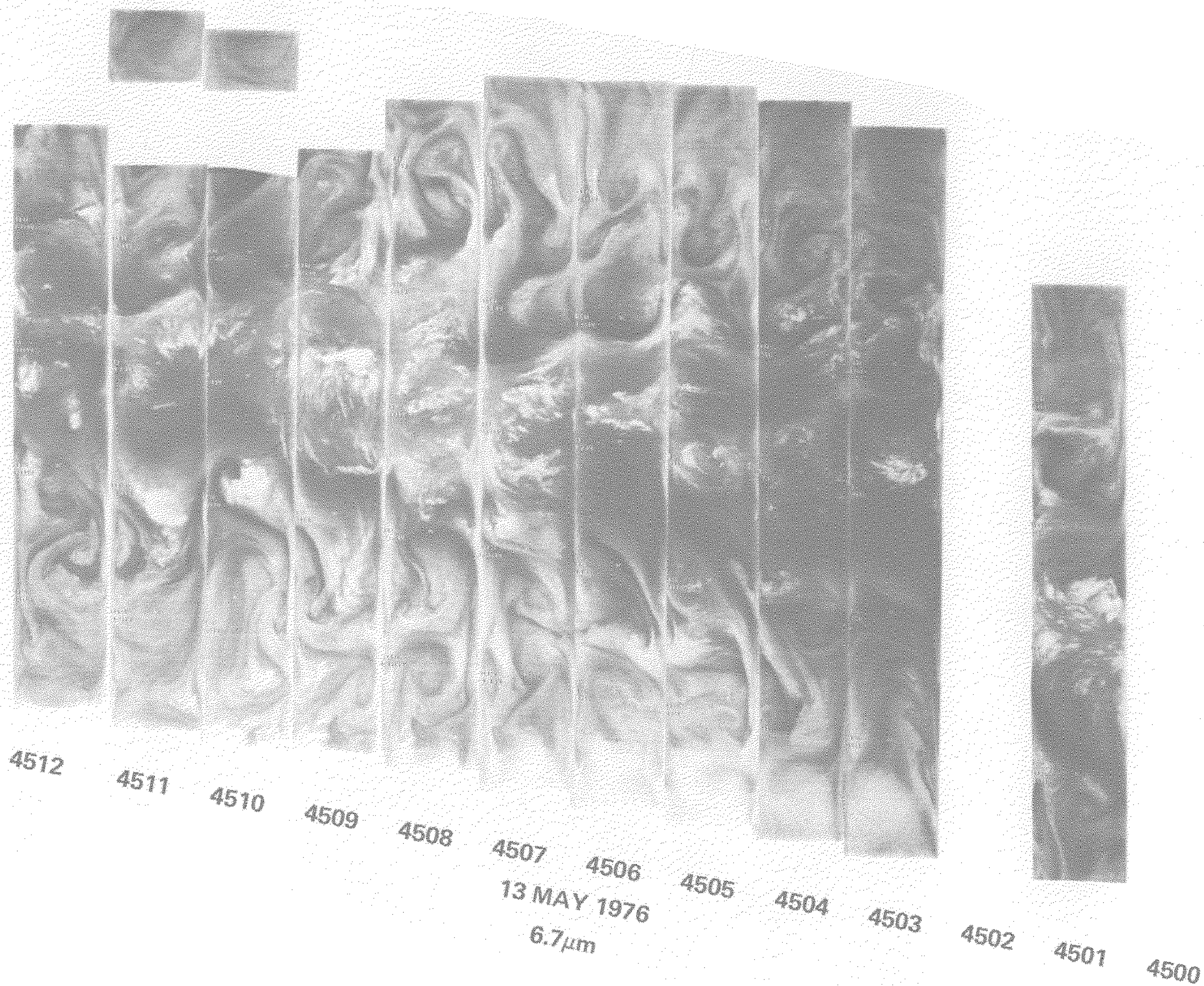
12 MAY 1976
6.7μm



4499 4498 4497 4496 4495 4494 4493 4492 4491 4490 4489 4488 4487 4486

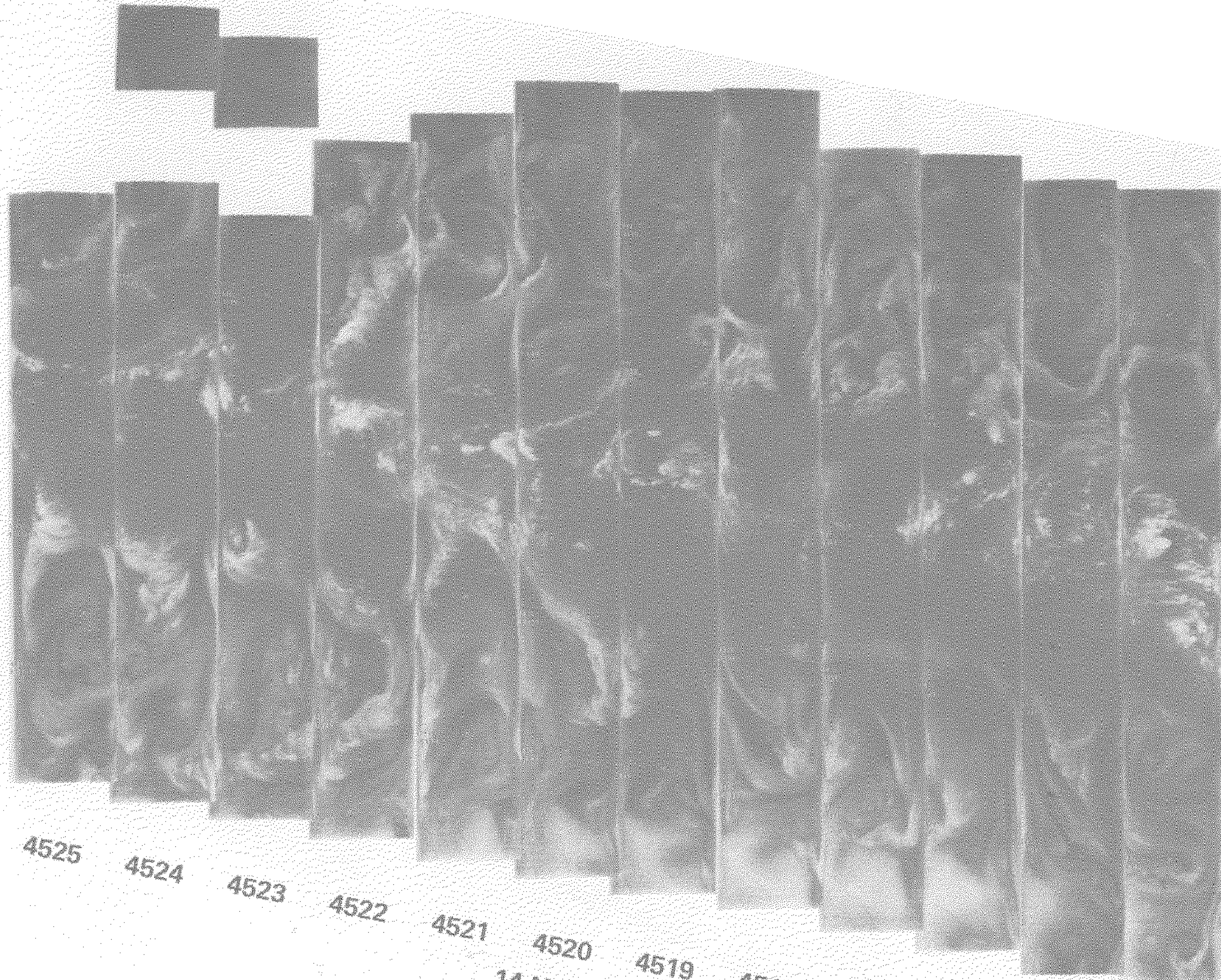
12 MAY 1976

11.5μm

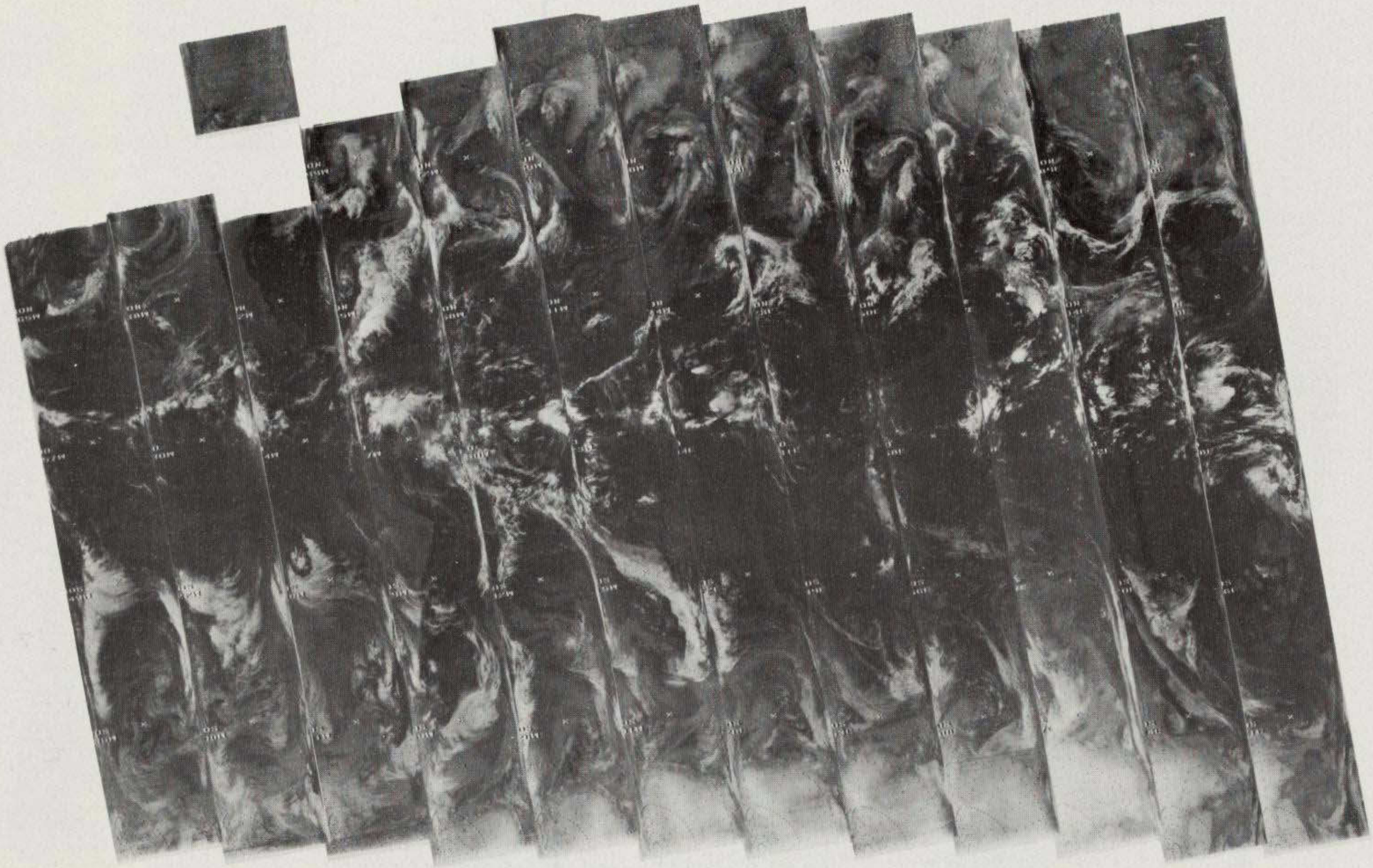

4512
4511
4510
4509
4508
4507
4506
4505
4504
4503
4502
4501
4500
13 MAY 1976
6.7μm

13 MAY 1976

11.5μm



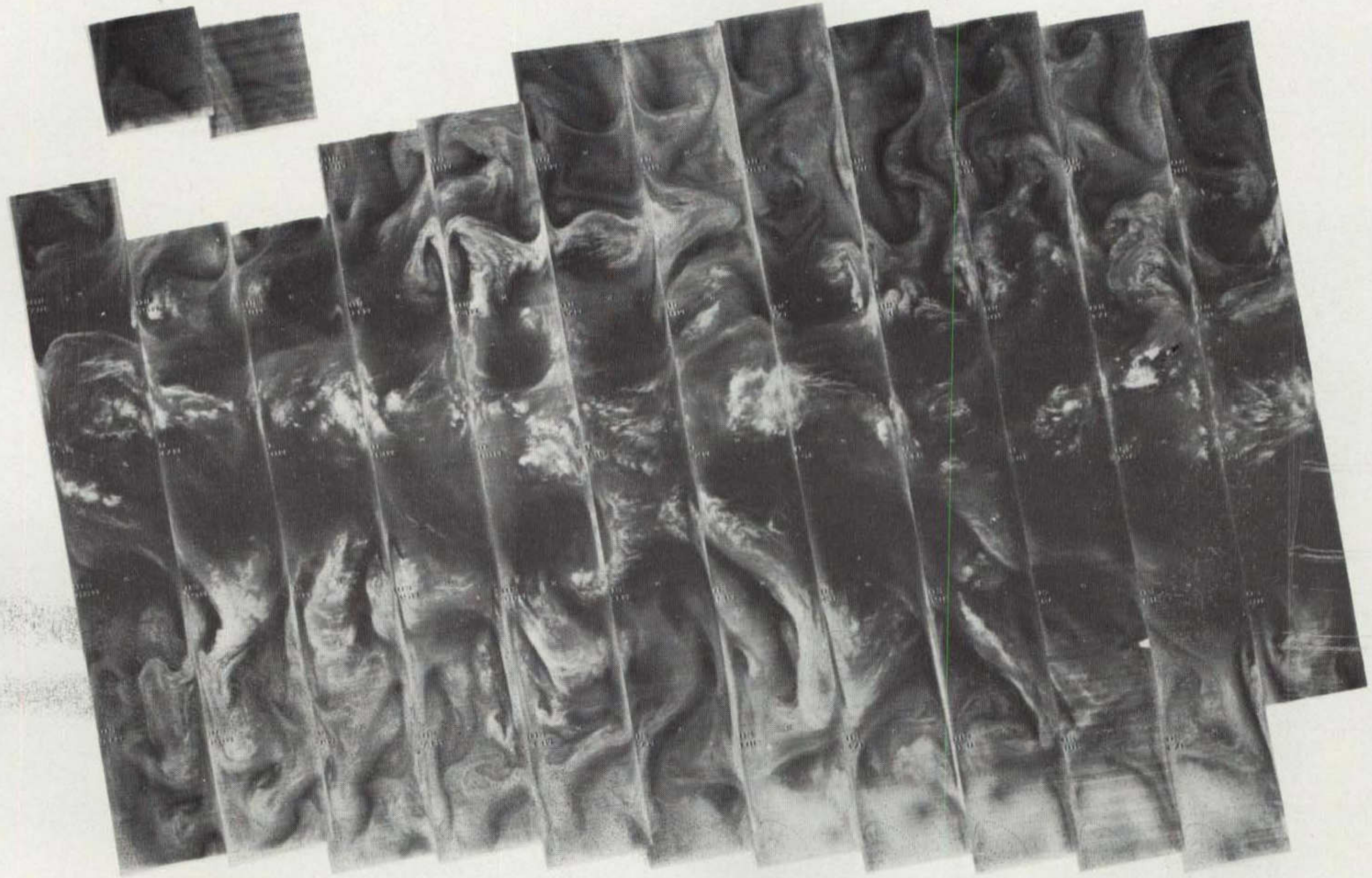
14 MAY 1976
6.7μm



4526 4525 4524 4523 4522 4521 4520 4519 4518 4517 4516 4515 4514 4513

14 MAY 1976

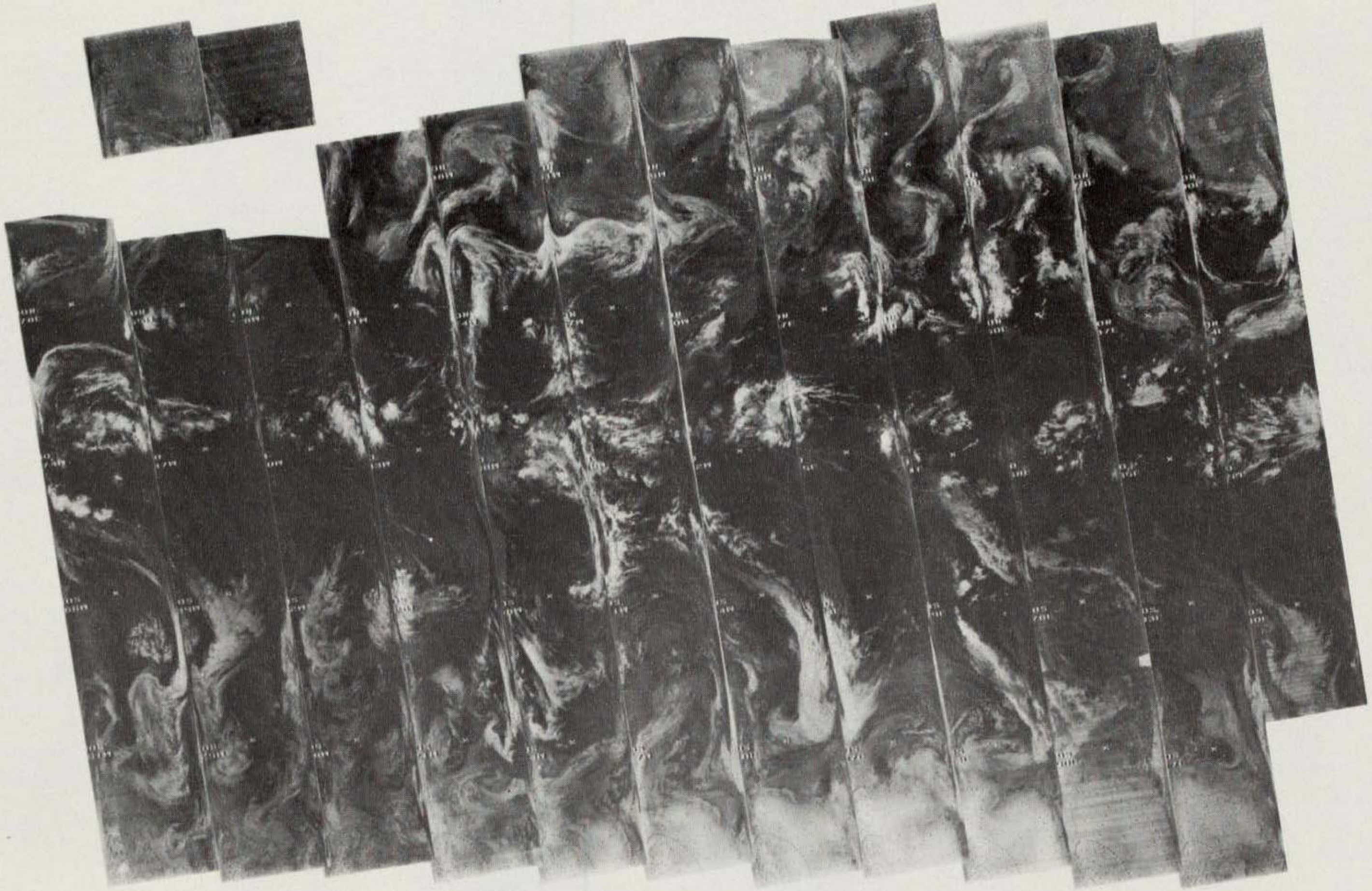
11.5μm



4539 4538 4537 4536 4535 4534 4533 4532 4531 4530 4529 4528 4527

15 MAY 1976

6.7μm



4539 4538 4537 4536 4535 4534 4533 4532 4531 4530 4529 4528 4527

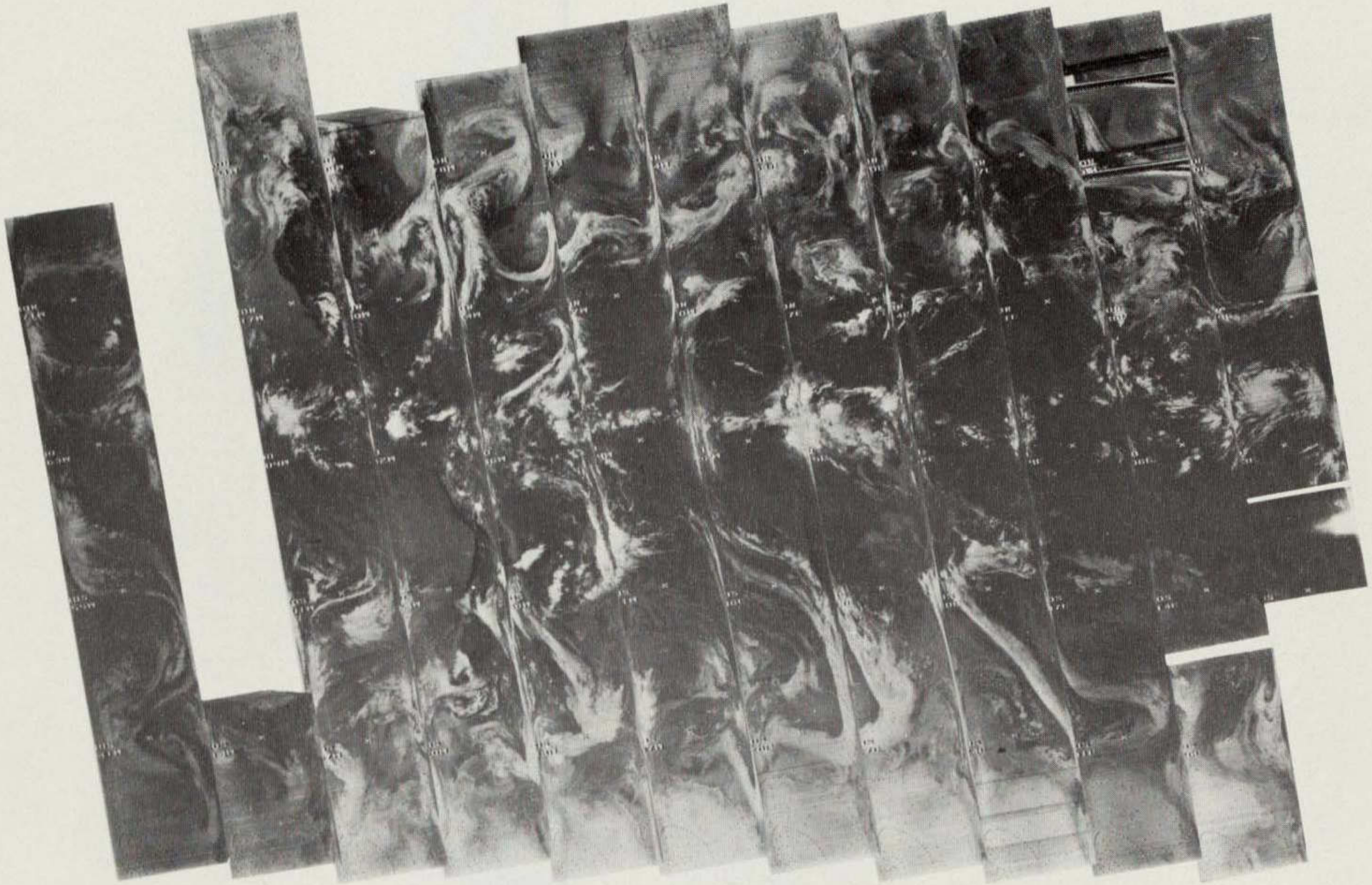
15 MAY 1976

11.5μm

4552 4551 4550 4549 4548 4547 4546 4545 4544 4543 4542 4541 4540

16 MAY 1976

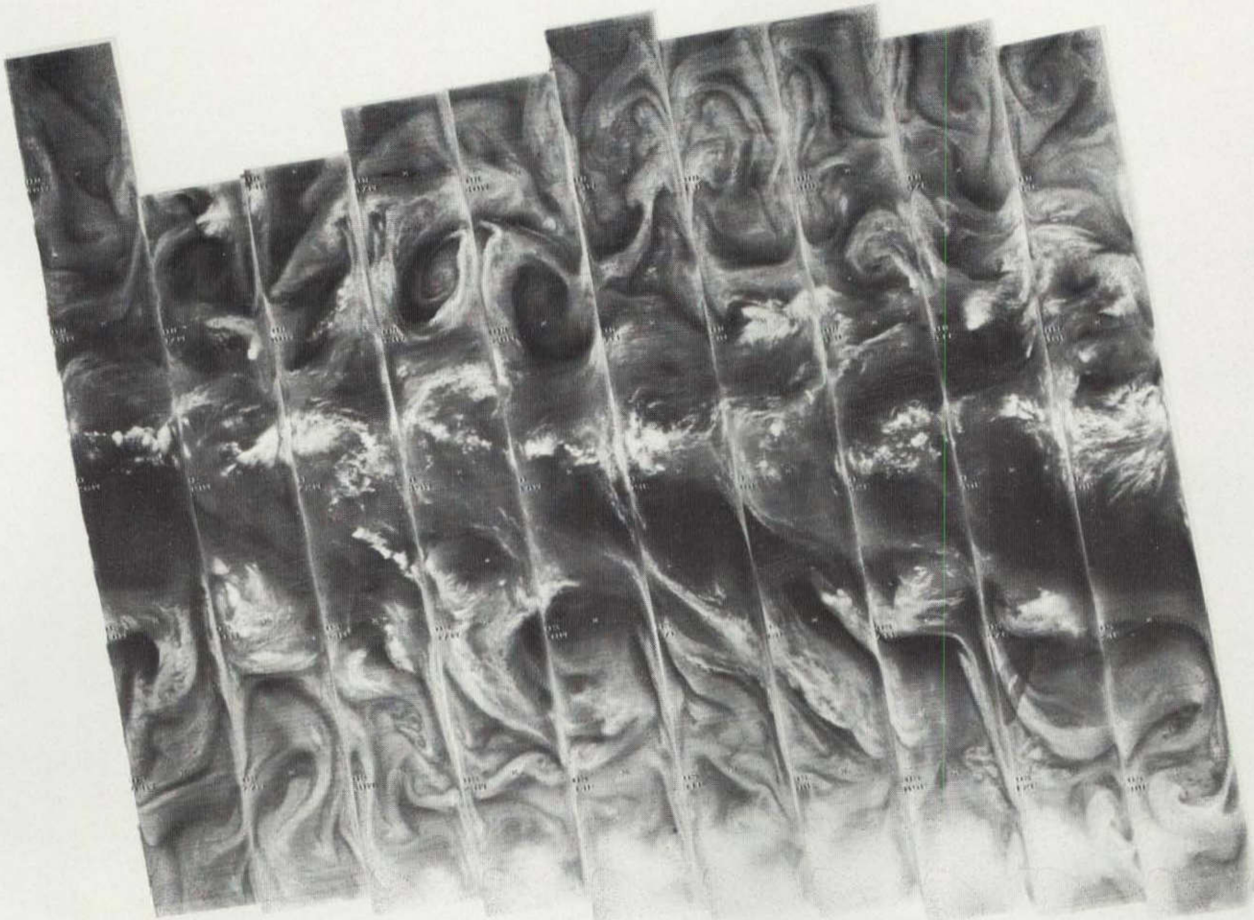
6.7μm



4552 4551 4550 4549 4548 4547 4546 4545 4544 4543 4542 4541 4540

16 MAY 1976

11.5μm



4566 4565 4564 4563 4562 4561 4560 4559 4558 4557 4556 4555 4554 4553

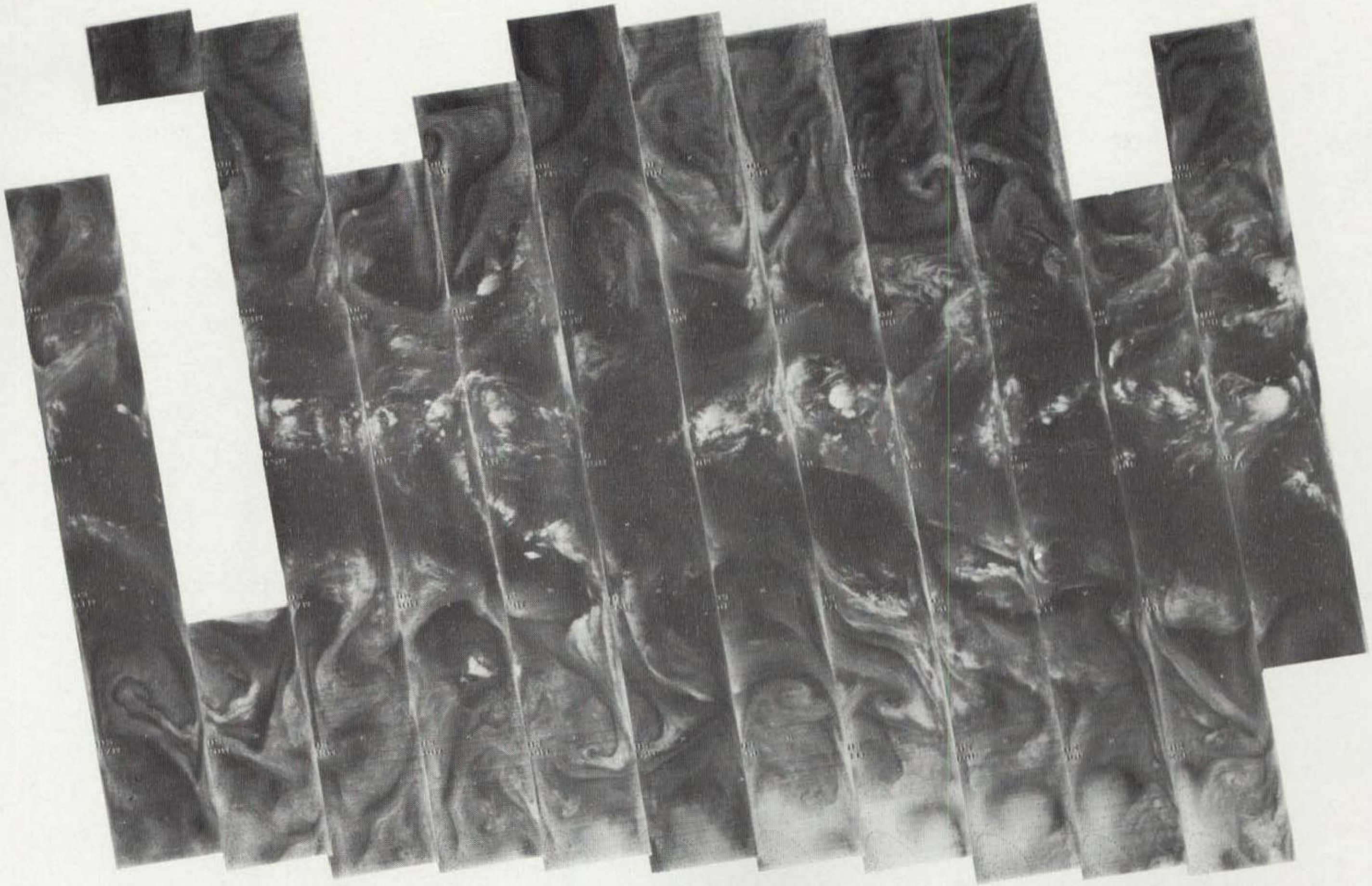
17 MAY 1976

6.7μm

4566 4565 4564 4563 4562 4561 4560 4559 4558 4557 4556 4555 4554 4553

17 MAY 1976

11.5μm



4579 4578 4577 4576 4575 4574 4573 4572 4571 4570 4569 4568 4567

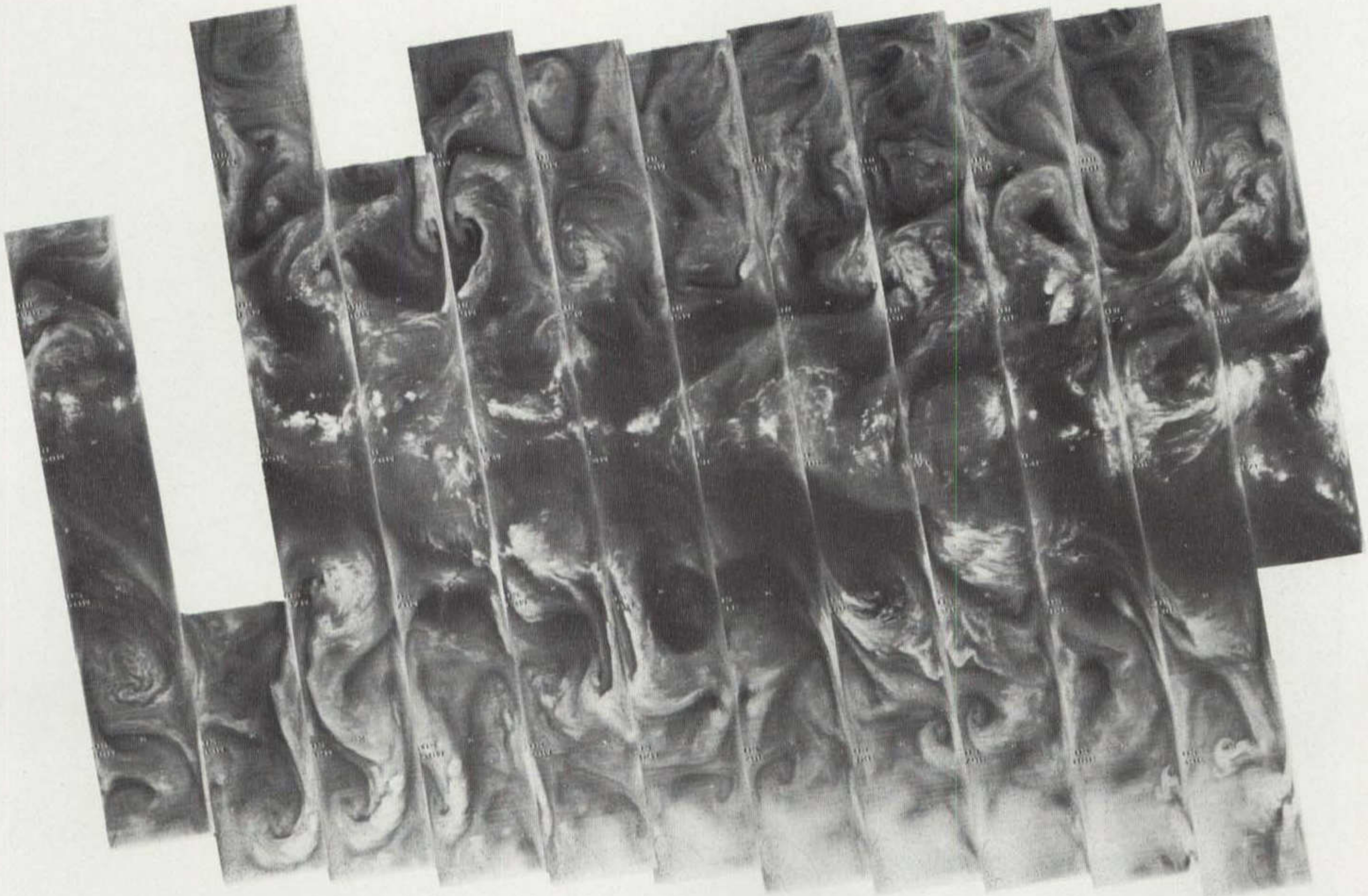
18 MAY 1976

6.7μm

4579 4578 4577 4576 4575 4574 4573 4572 4571 4570 4569 4568 4567

18 MAY 1976

11.5μm



4592 4591 4590 4589 4588 4587 4586 4585 4584 4583 4582 4581 4580

19 MAY 1976

6.7μm

4592 4591 4590 4589 4588 4587 4586 4585 4584 4583 4582 4581 4580

19 MAY 1976

11.5μm

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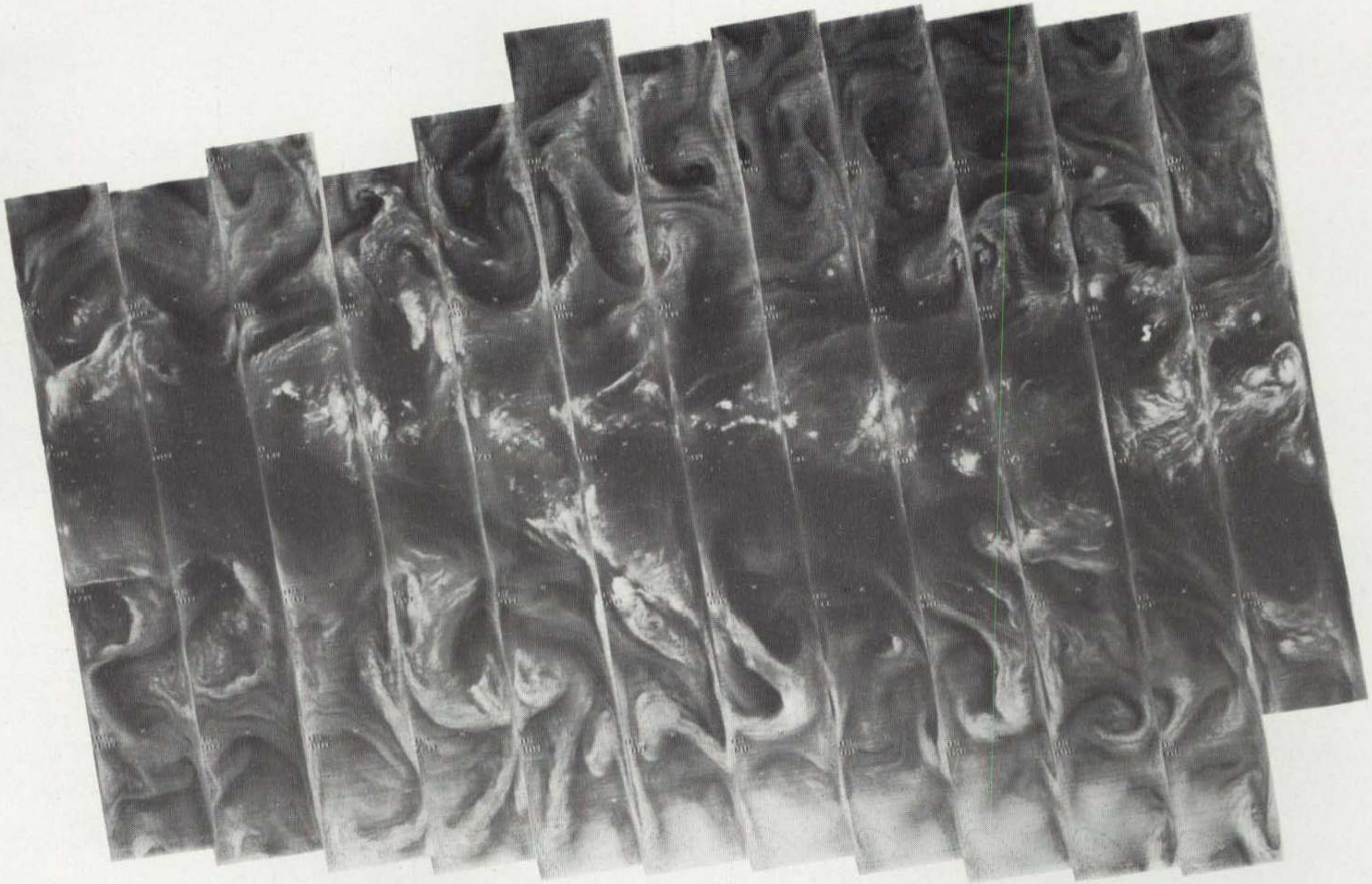


4606 4605 4604 4603 4602 4601 4600 4599 4598 4597 4596 4595 4594 4593

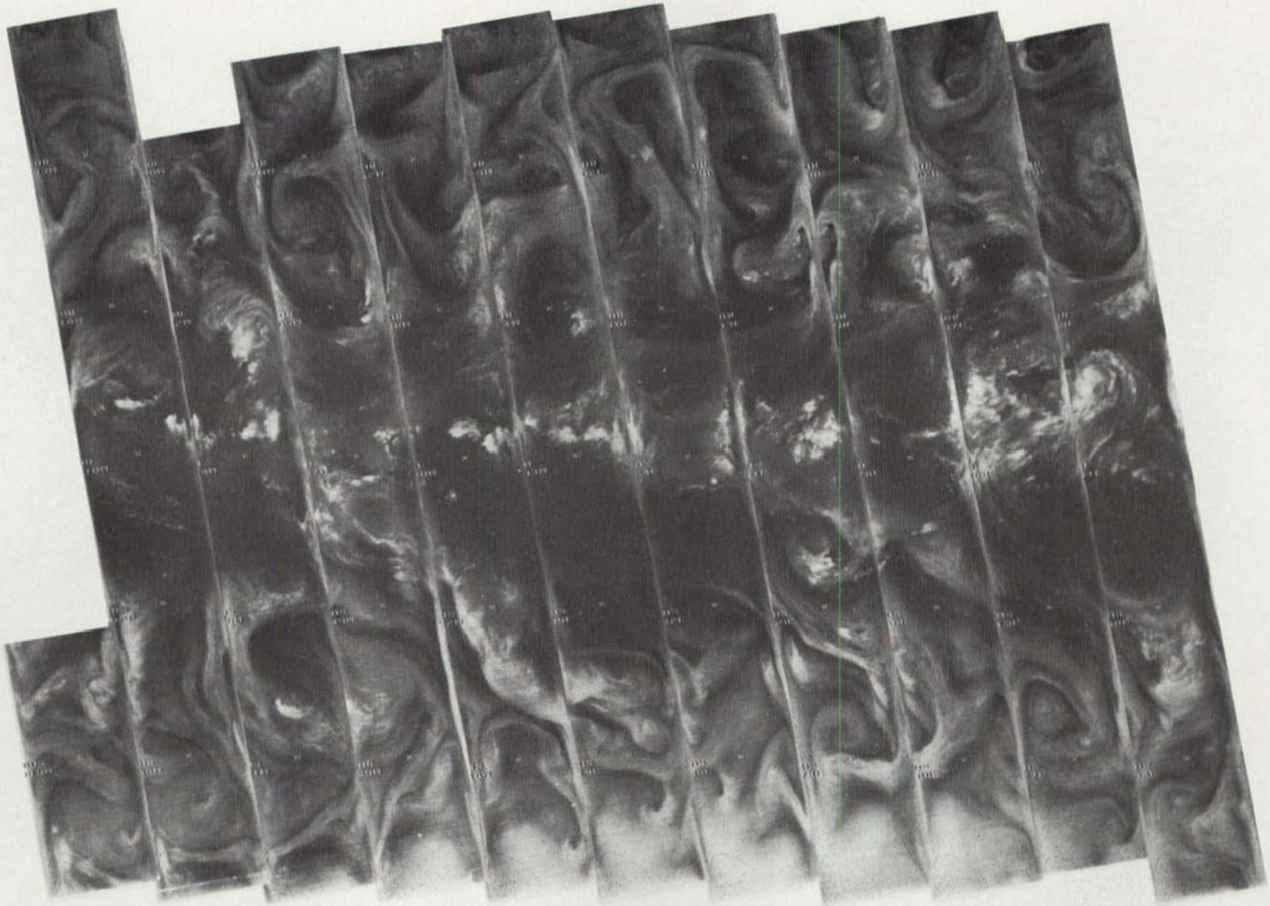
20 MAY 1976

6.7μm

4606 4605 4604 4603 4602 4601 4600 4599 4598 4597 4596 4595 4594 4593

20 MAY 1976

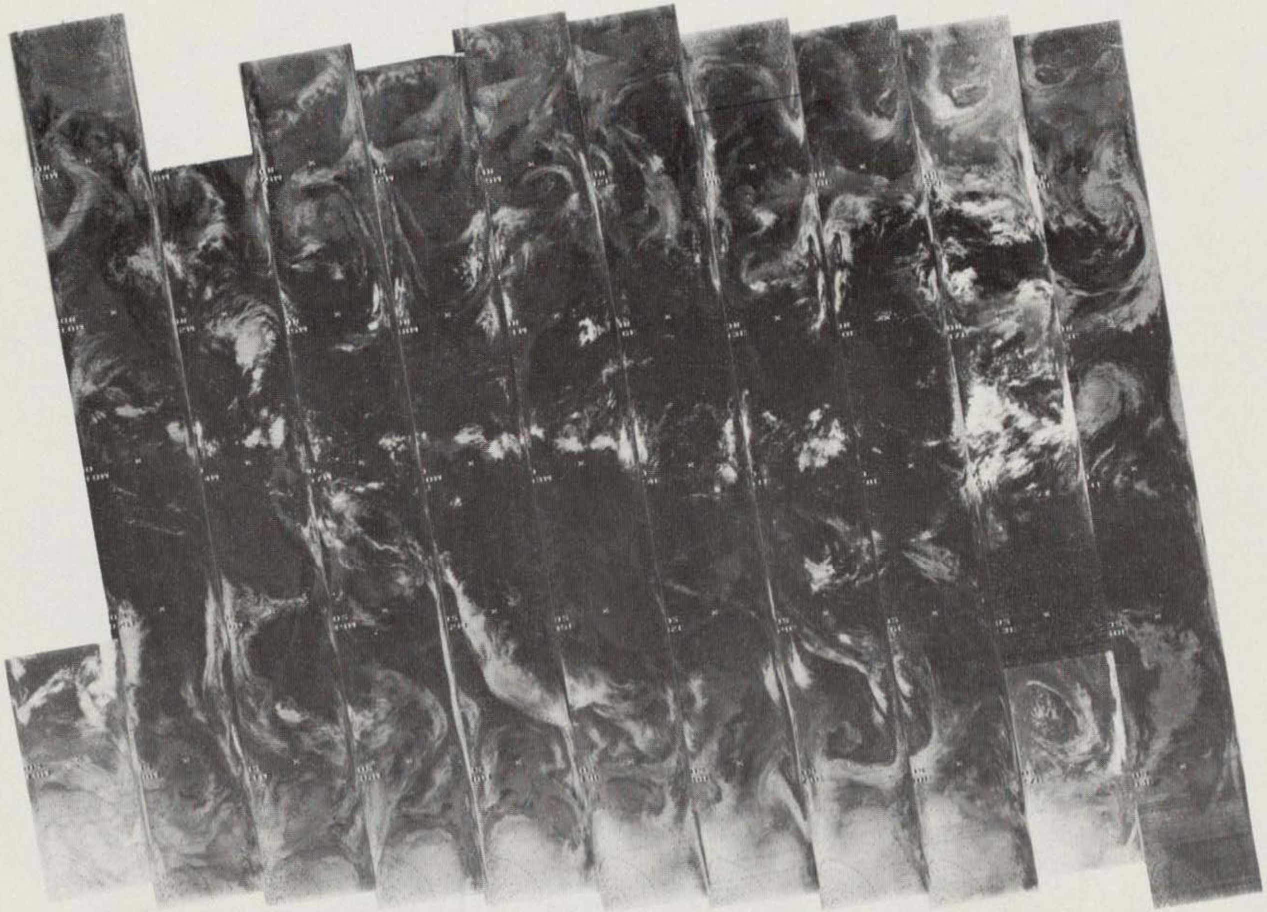
11.5μm



4619 4618 4617 4616 4615 4614 4613 4612 4611 4610 4609 4608 4607

21 MAY 1976

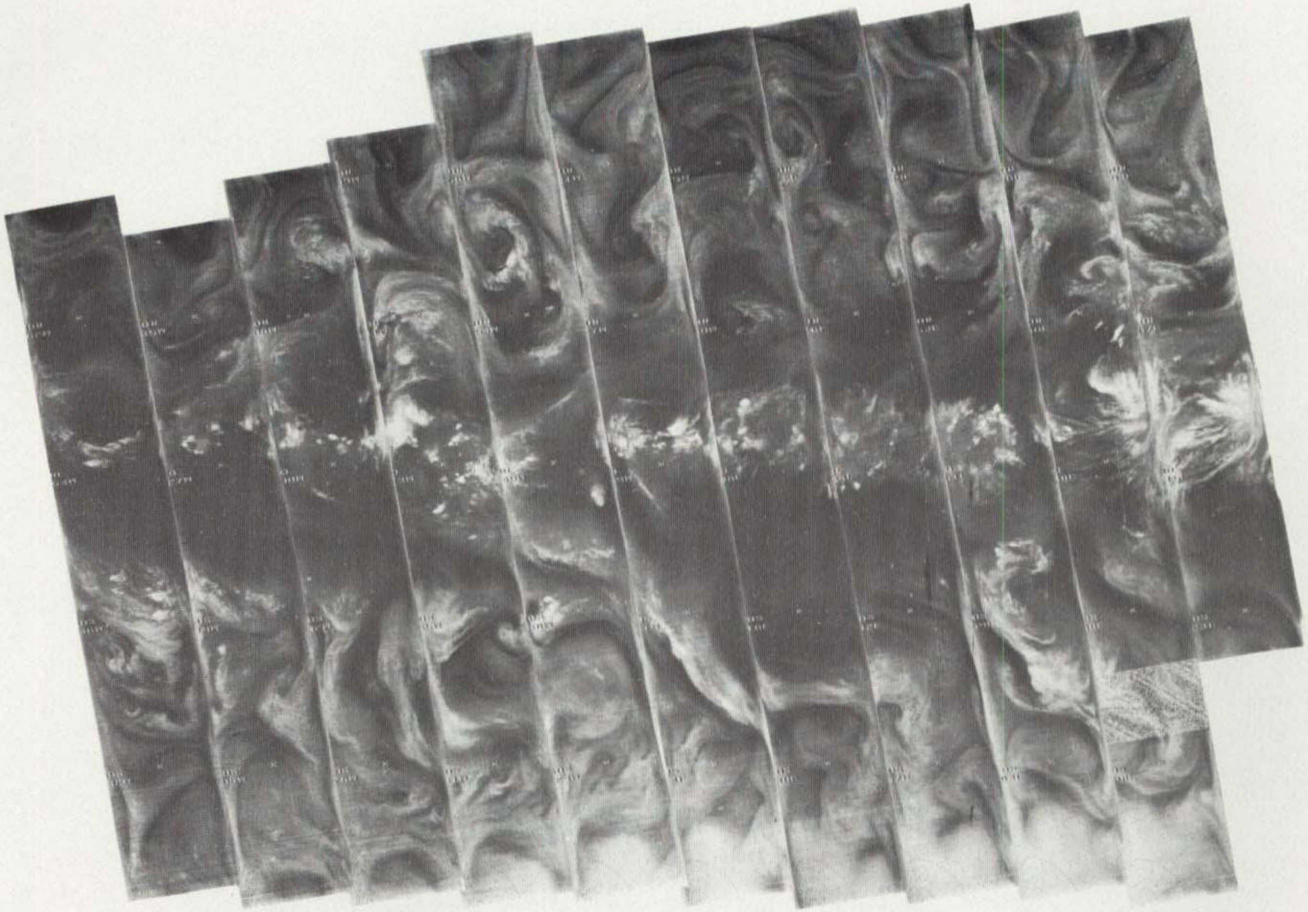
6.7μm



4619 4618 4617 4616 4615 4614 4613 4612 4611 4610 4609 4608 4607

21 MAY 1976

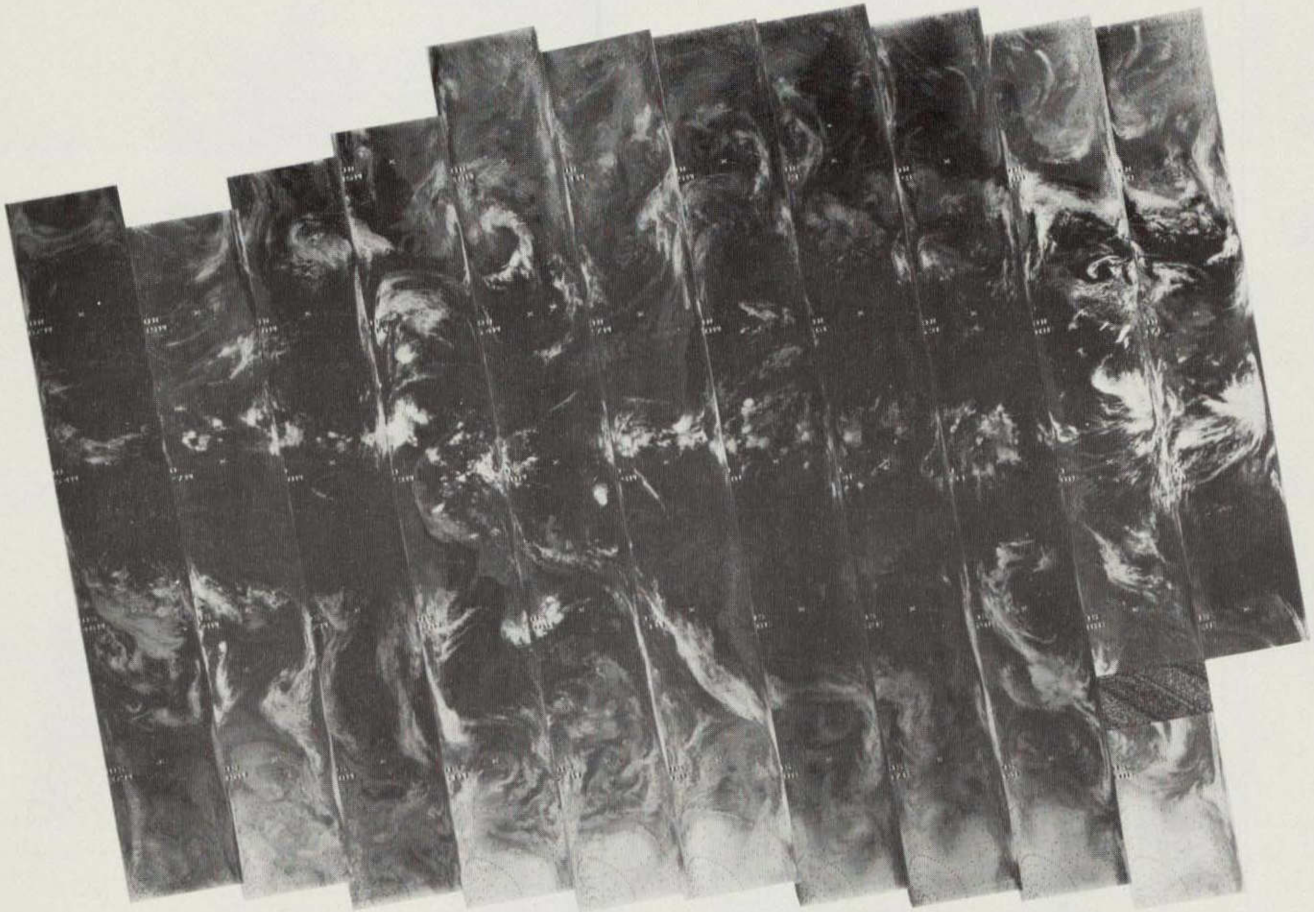
$11.5\mu m$



4633 4632 4631 4630 4629 4628 4627 4626 4625 4624 4623 4622 4621 4620

22 MAY 1976

6.7μm

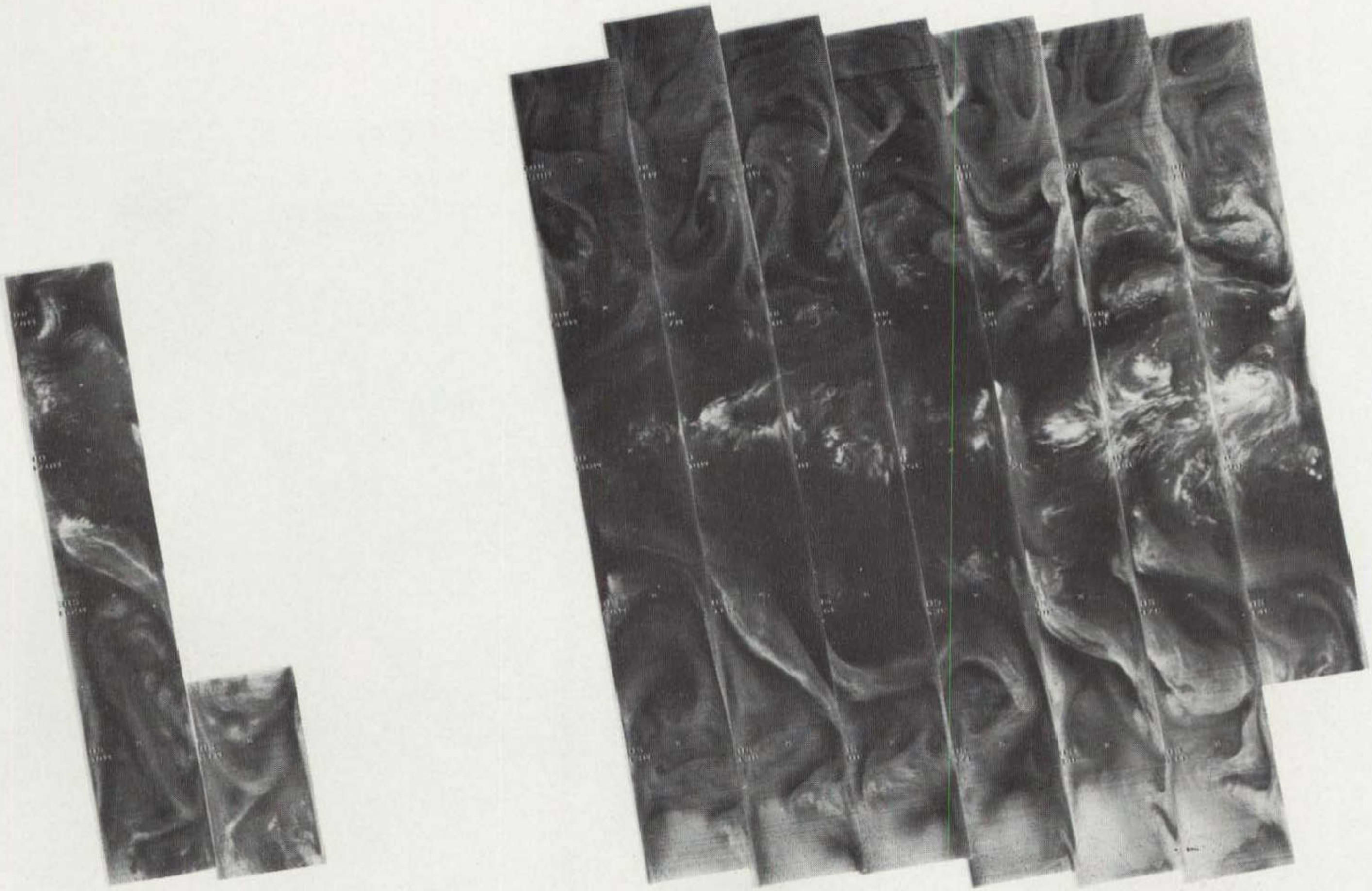


4633 4632 4631 4630 4629 4628 4627 4626 4625 4624 4623 4622 4621 4620

22 MAY 1976

11.5μm

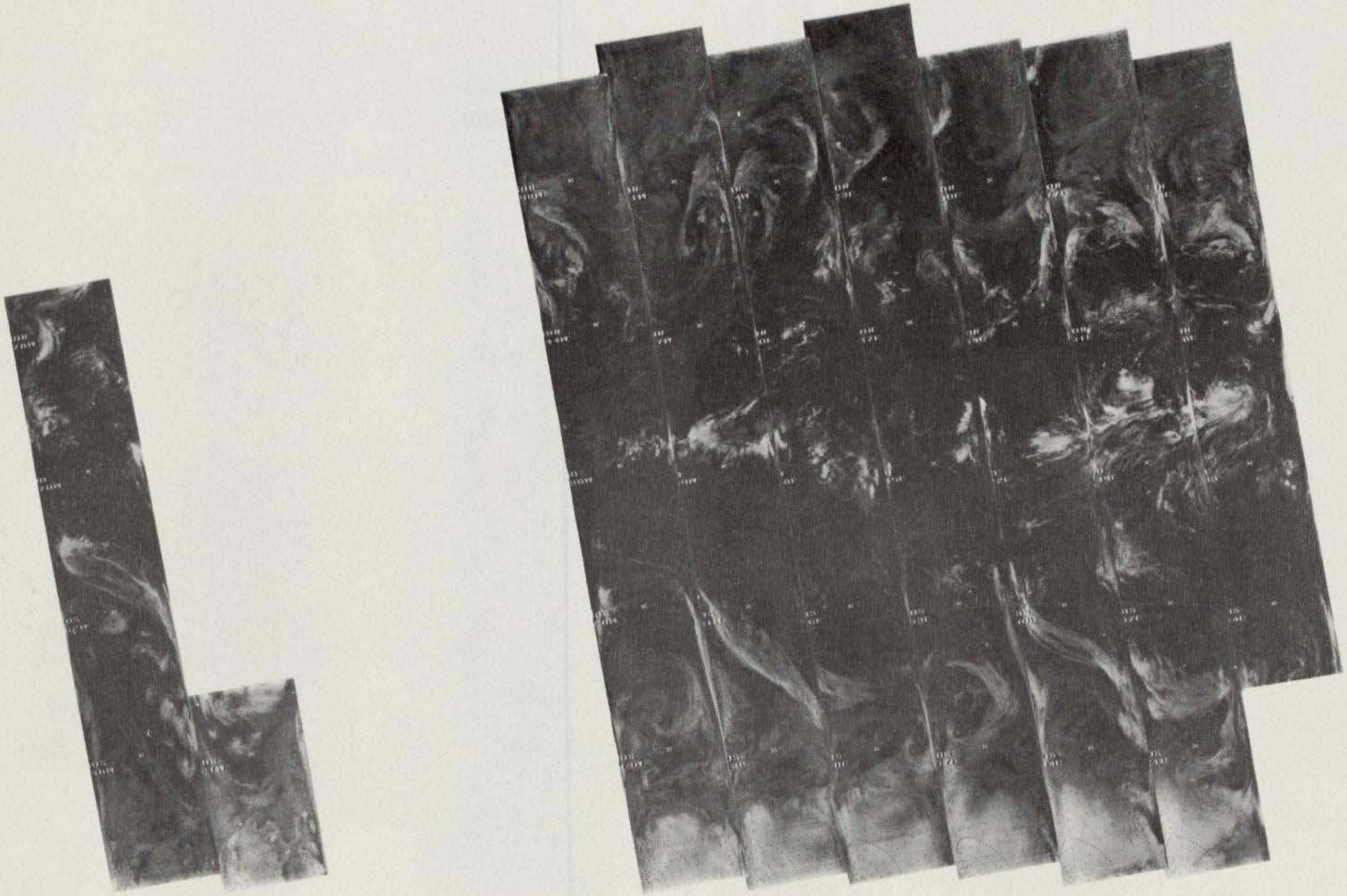
ORIGINAL PAGE IS
OF POOR QUALITY



4646 4645 4644 4643 4642 4641 4640 4639 4638 4637 4636 4635 4634

23 MAY 1976

6.7μm

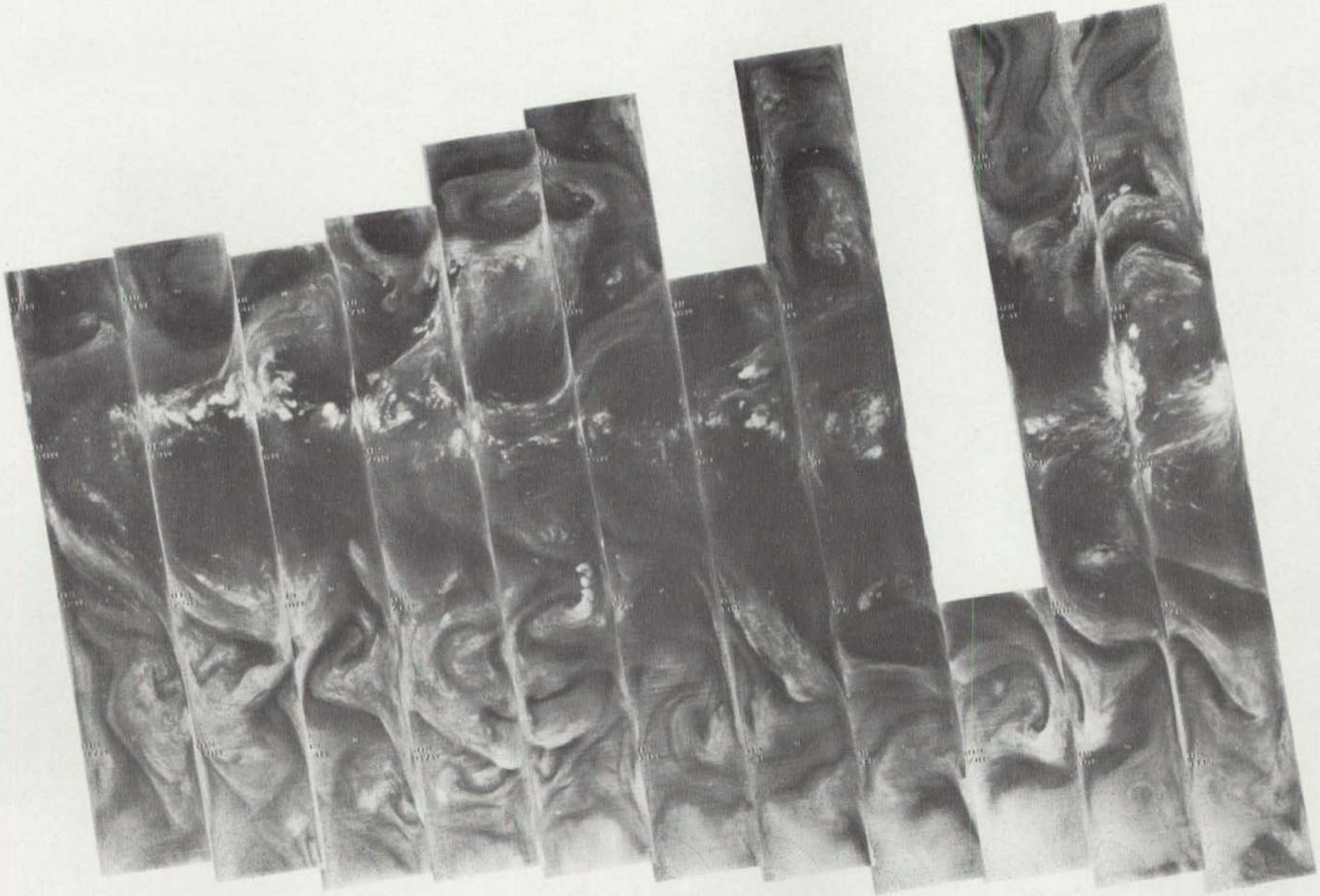


4646 4645 4644 4643 4642 4641 4640 4639 4638 4637 4636 4635 4634

23 MAY 1976

11.5μm

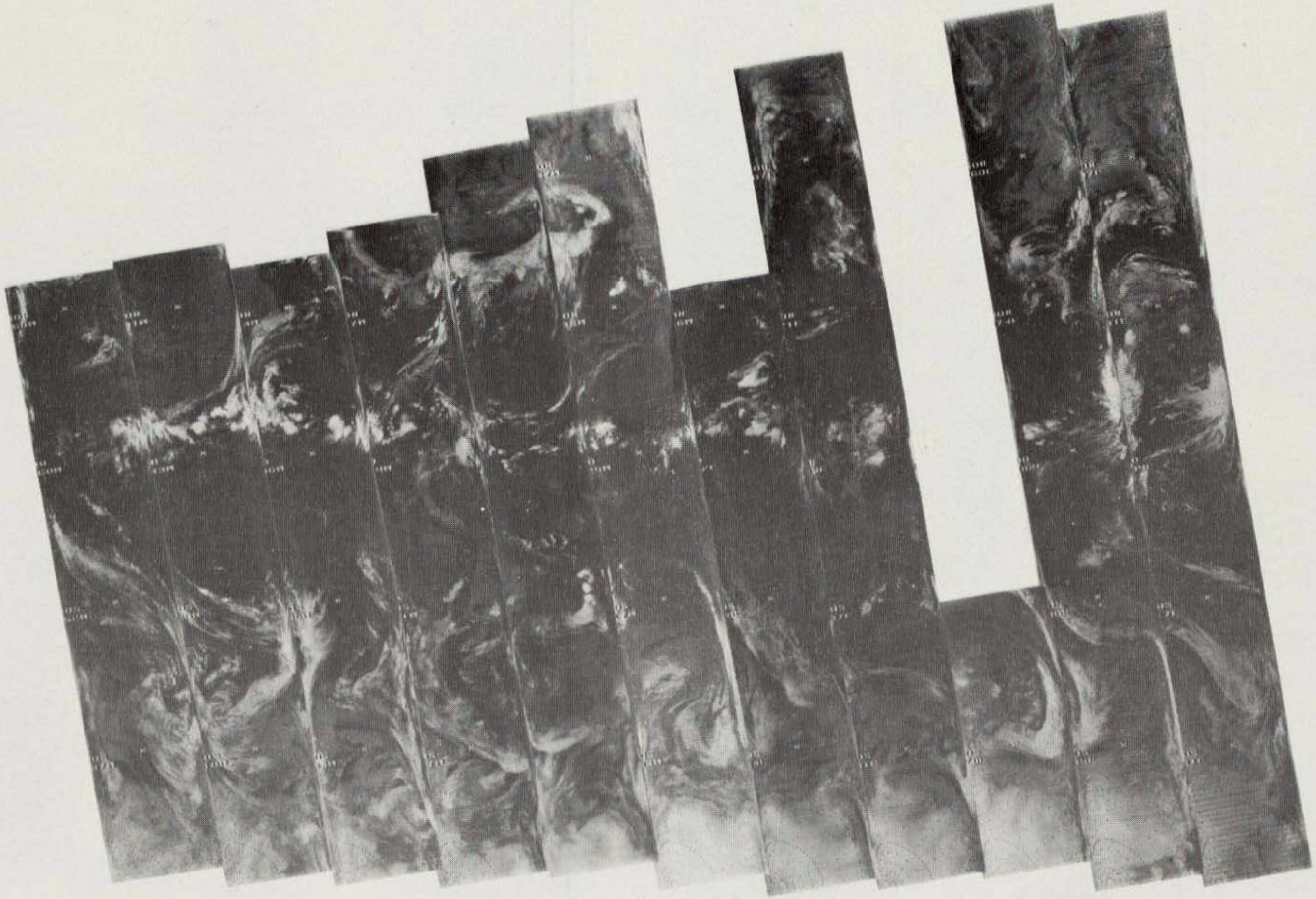
74-175



4659 4658 4657 4656 4655 4654 4653 4652 4651 4650 4649 4648 4647

24 MAY 1976

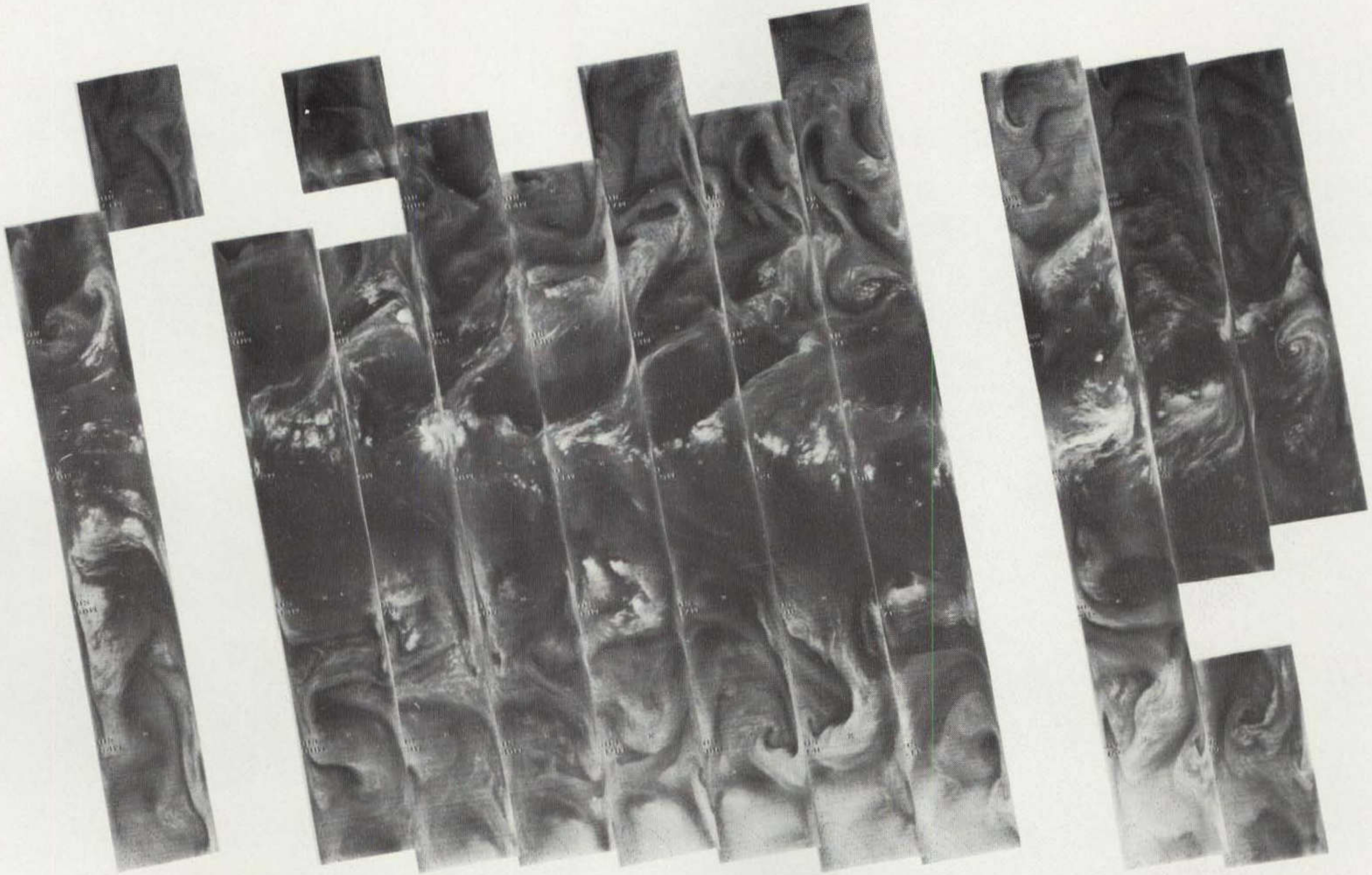
6.7μm



4659 4658 4657 4656 4655 4654 4653 4652 4651 4650 4649 4648 4647

24 MAY 1976

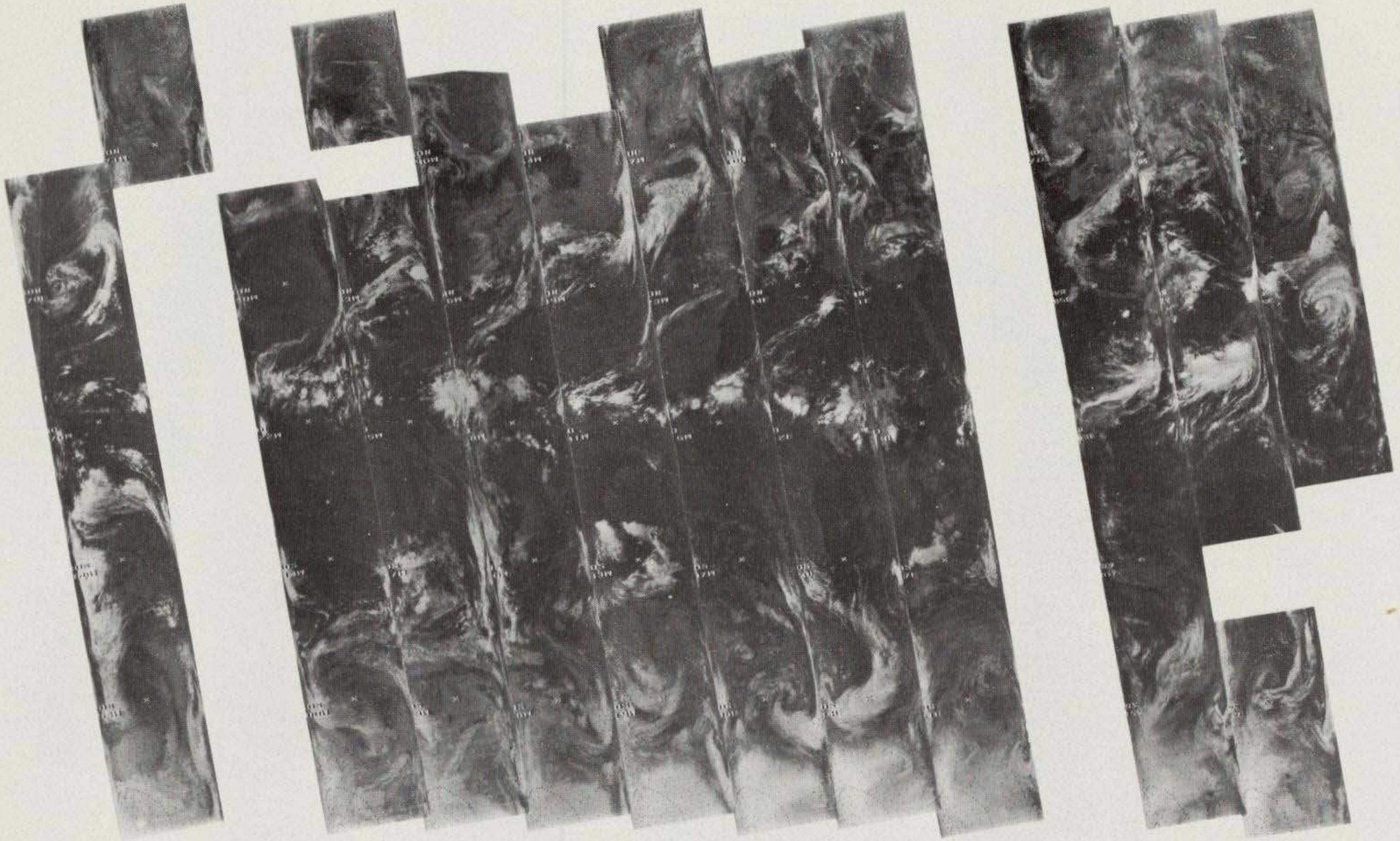
11.5μm



4673 4672 4671 4670 4669 4668 4667 4666 4665 4664 4663 4662 4661 4660

25 MAY 1976

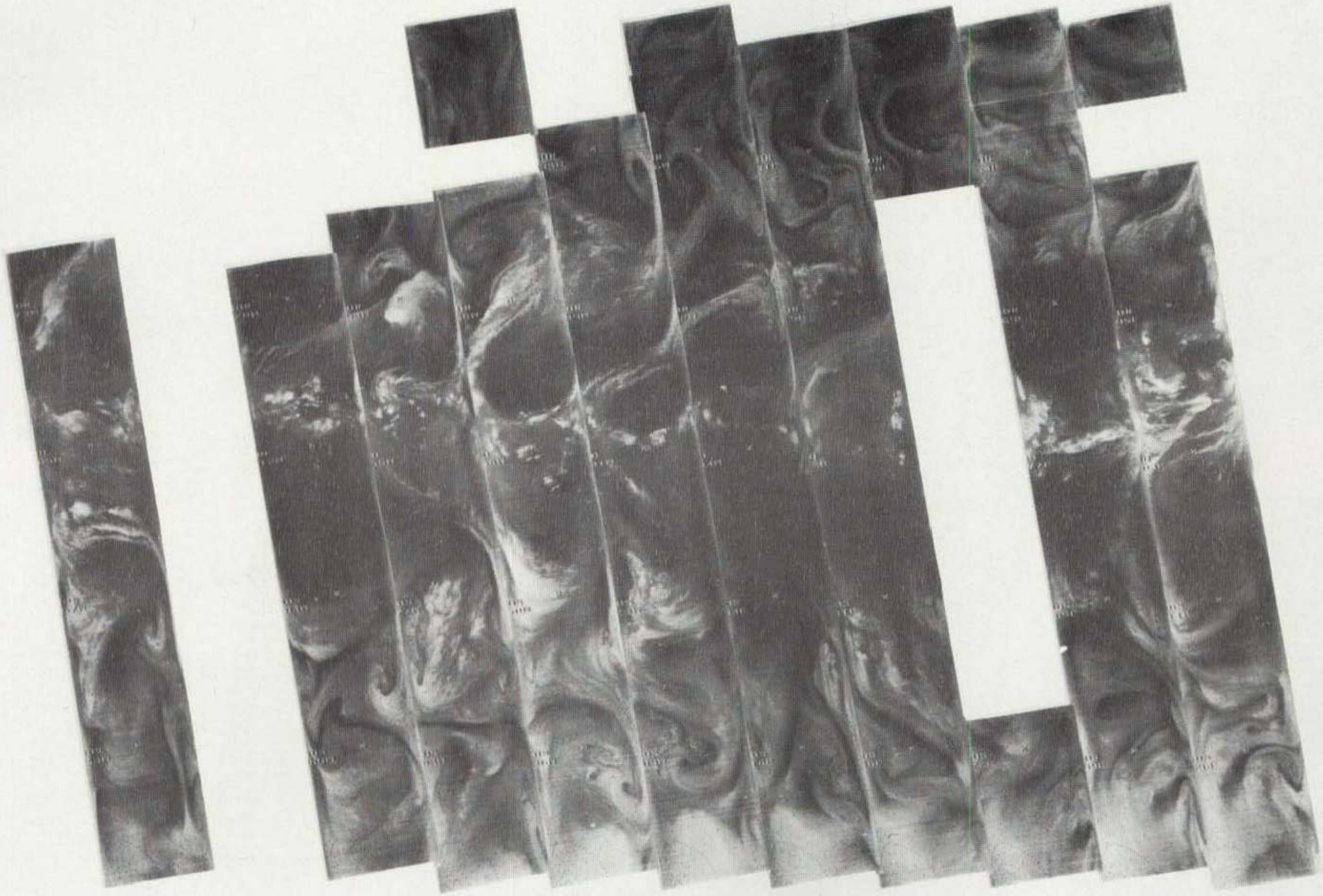
6.7μm



4673 4672 4671 4670 4669 4668 4667 4666 4665 4664 4663 4662 4661 4660

25 MAY 1976

11.5μm



4686 4685 4684 4683 4682 4681 4680 4679 4678 4677 4676 4675 4674

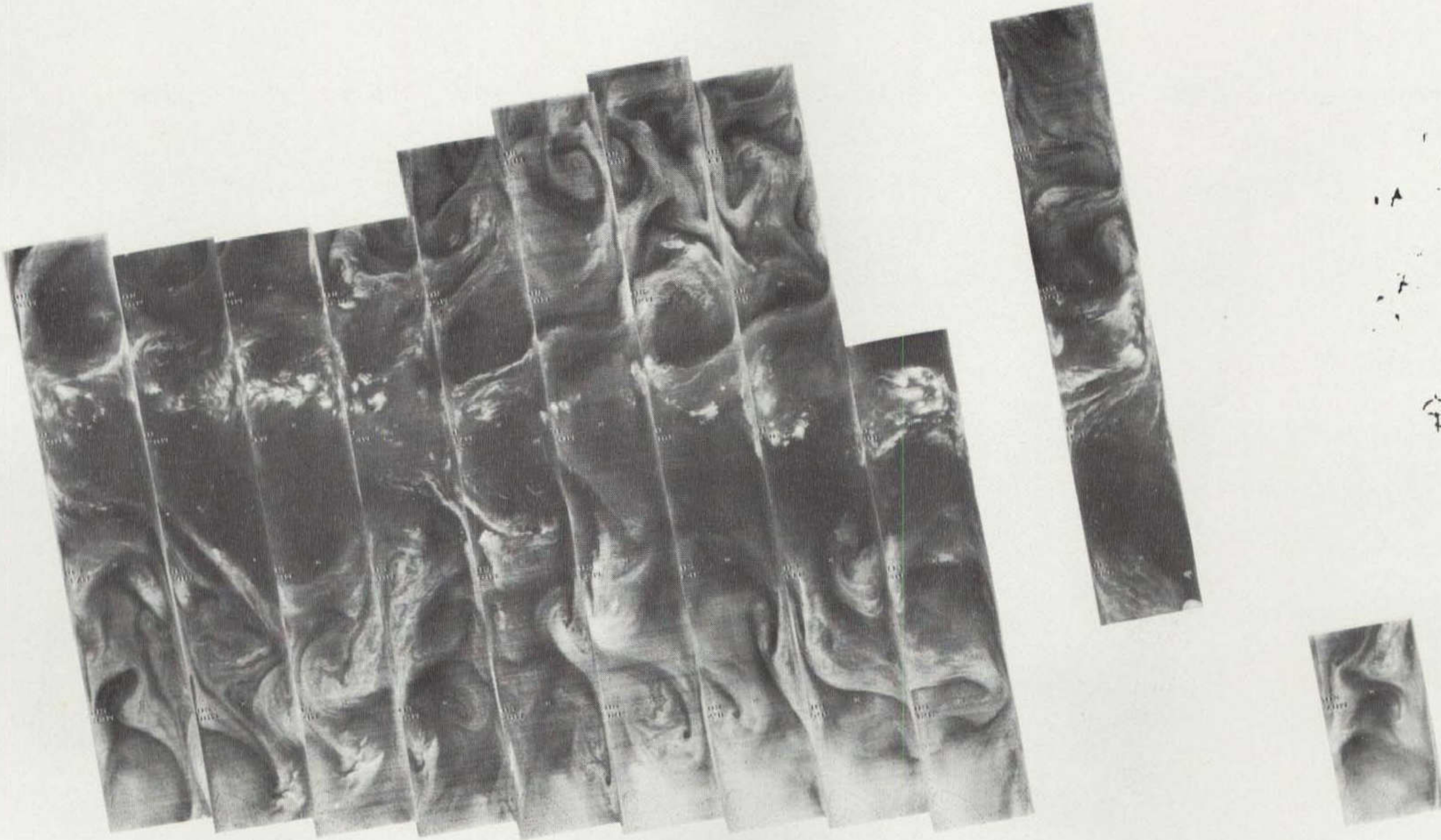
26 MAY 1976

6.7μm

4686 4685 4684 4683 4682 4681 4680 4679 4678 4677 4676 4675 4674

26 MAY 1976

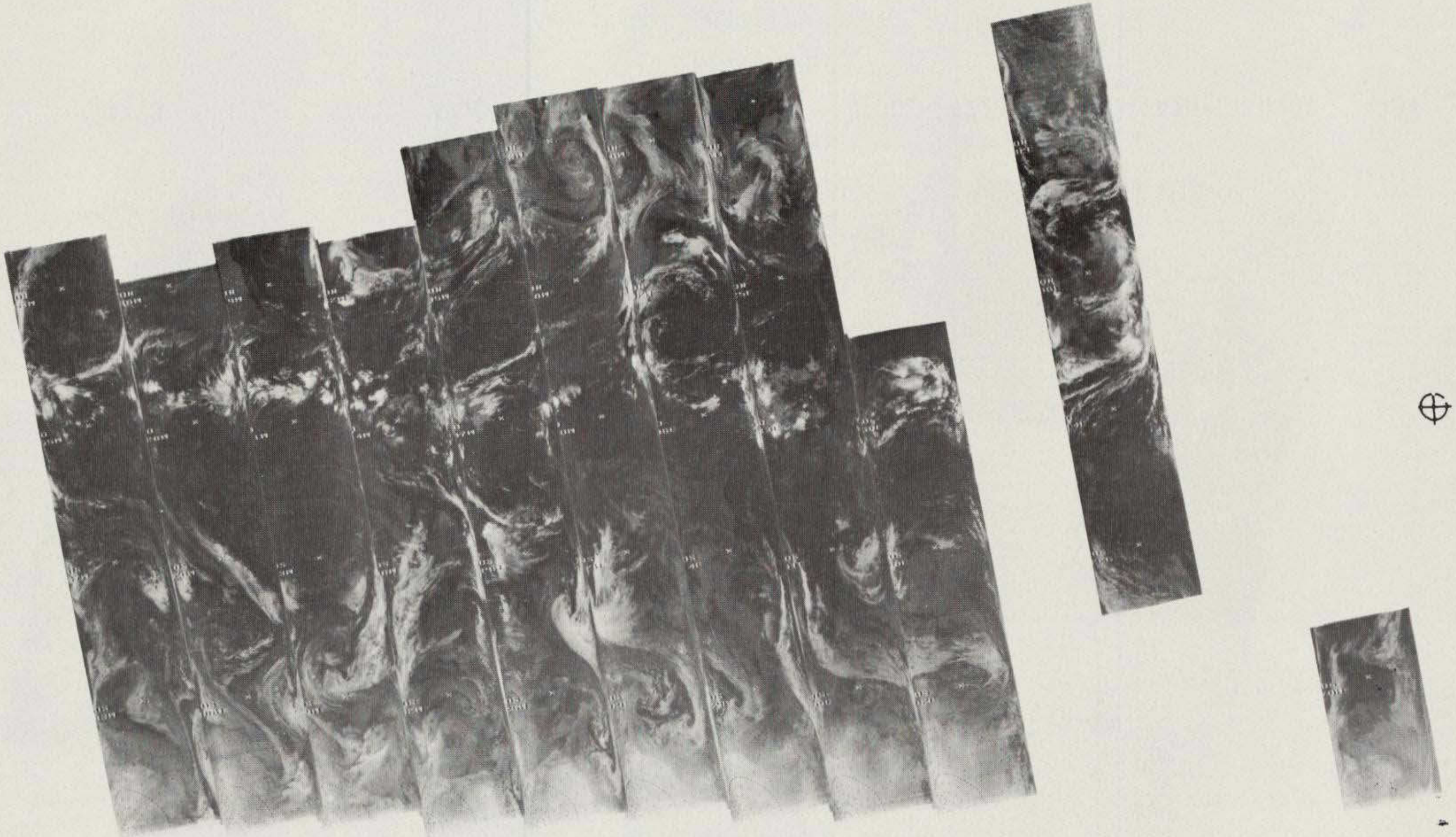
11.5μm



4700 4699 4698 4697 4696 4695 4694 4693 4692 4691 4690 4689 4688 4687

27 MAY 1976

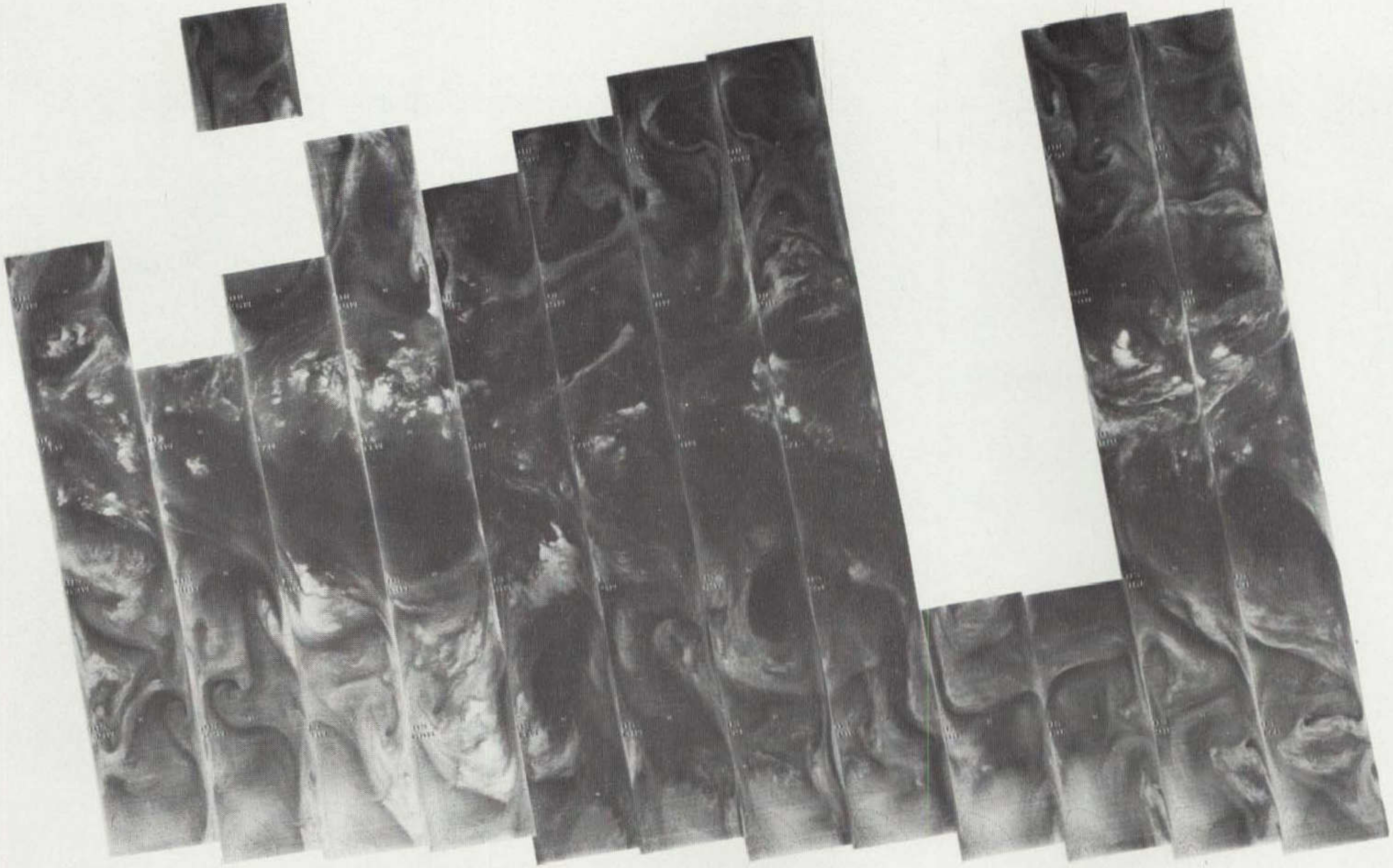
6.7μm



4700 4699 4698 4697 4696 4695 4694 4693 4692 4691 4690 4689 4688 4687

27 MAY 1976

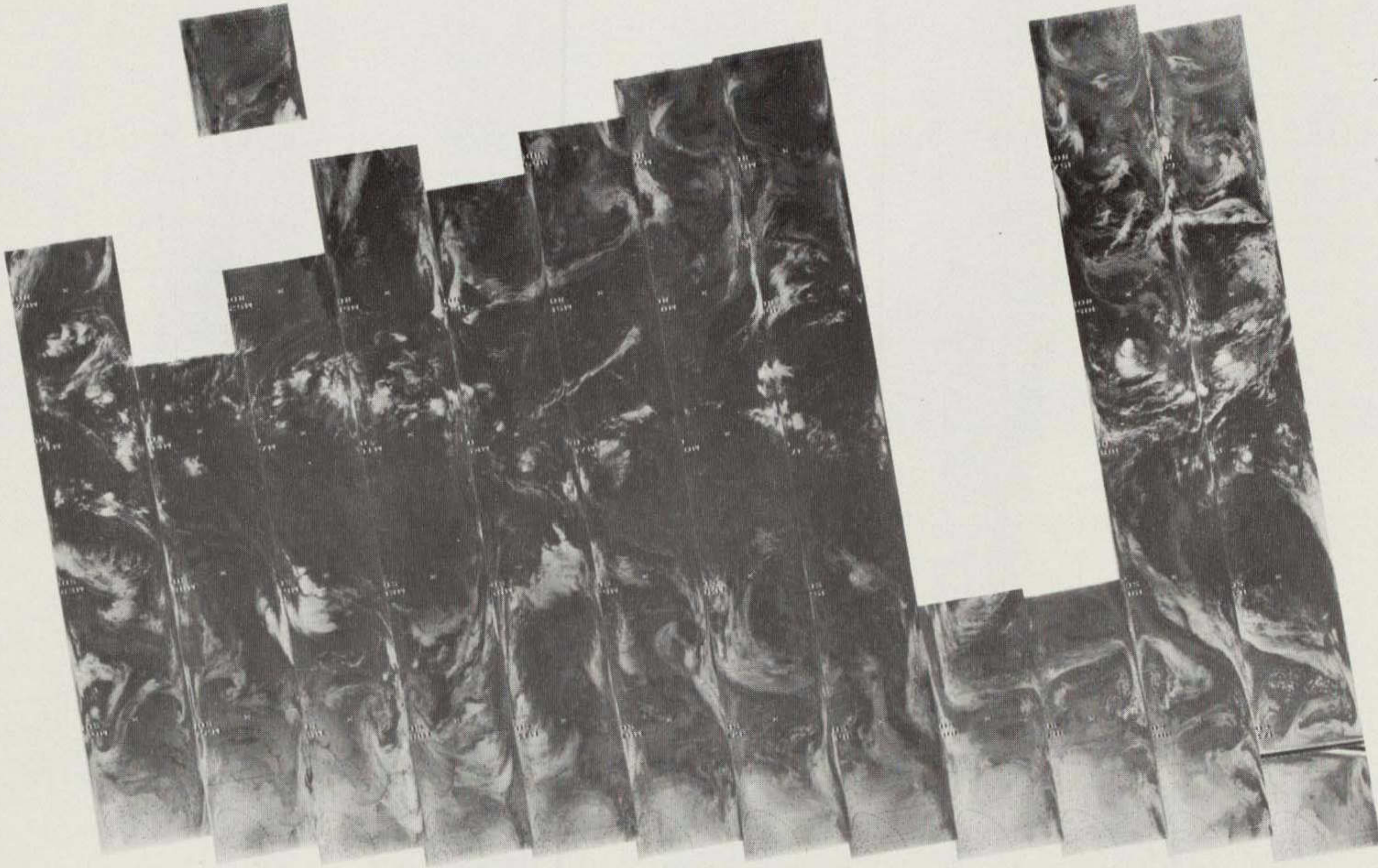
11.5μm



4713 4712 4711 4710 4709 4708 4707 4706 4705 4704 4703 4702 4701

28 MAY 1976

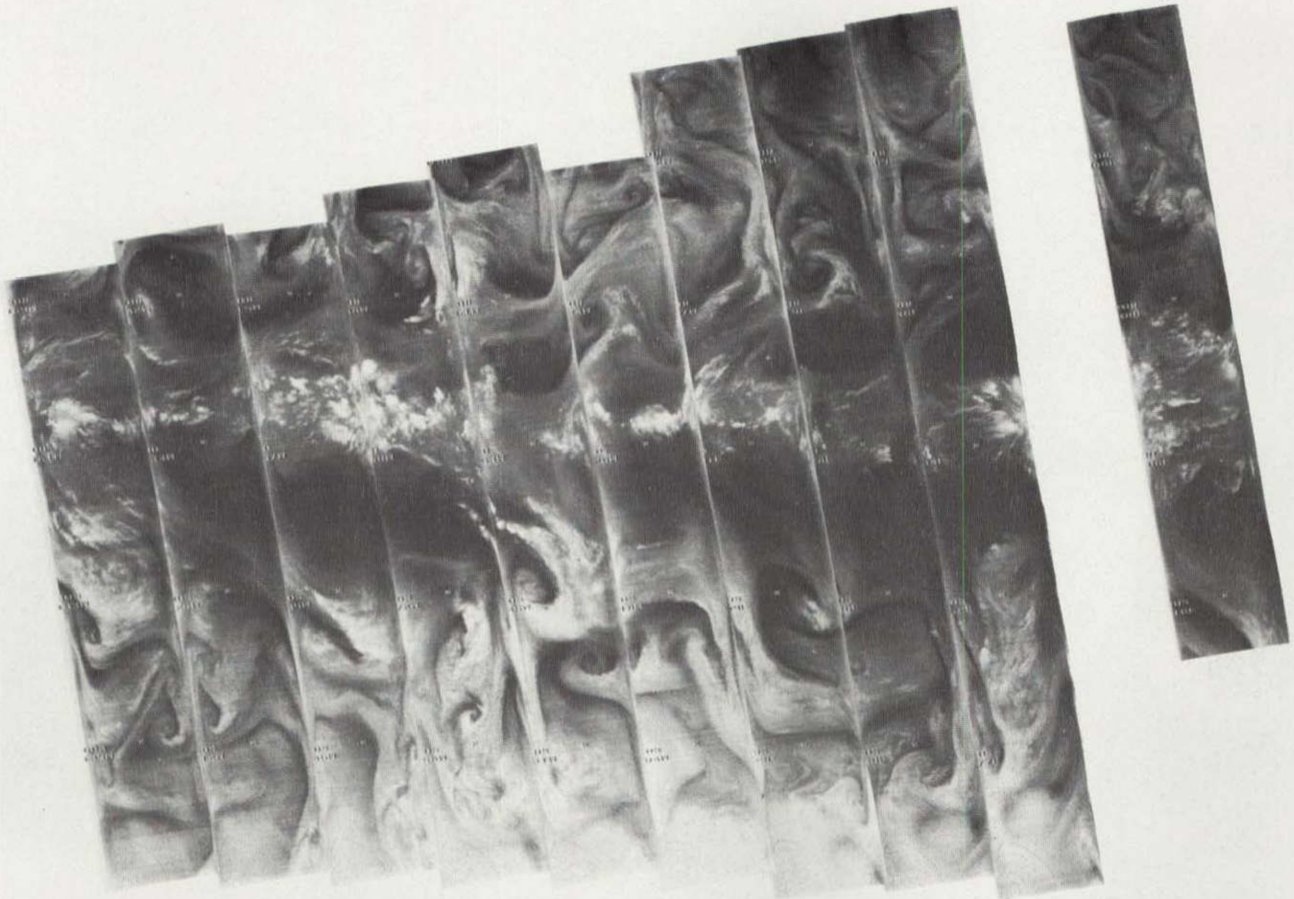
6.7μm



4713 4712 4711 4710 4709 4708 4707 4706 4705 4704 4703 4702 4701

28 MAY 1976

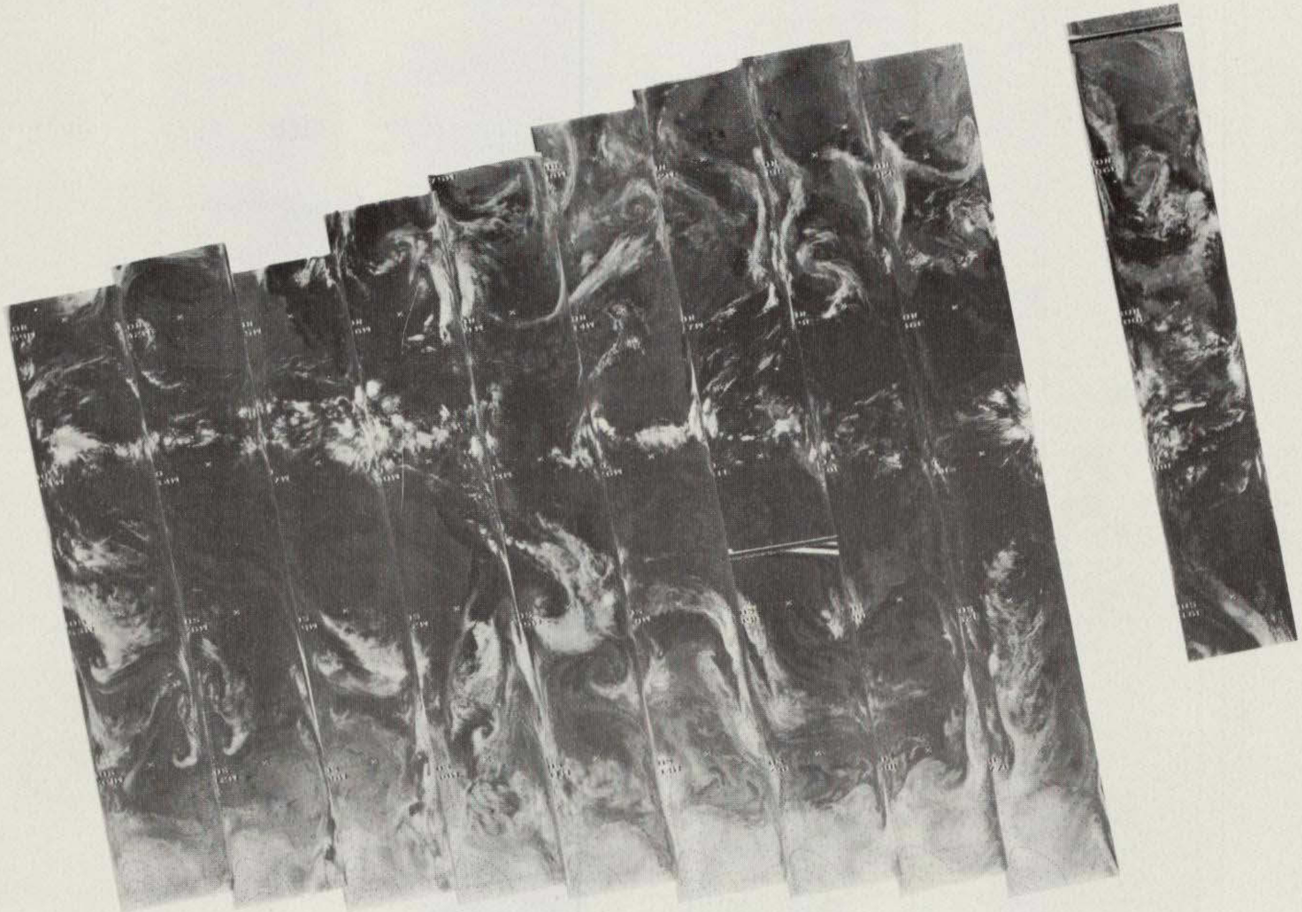
11.5μm



4726 4725 4724 4723 4722 4721 4720 4719 4718 4717 4716 4715 4714

29 MAY 1976

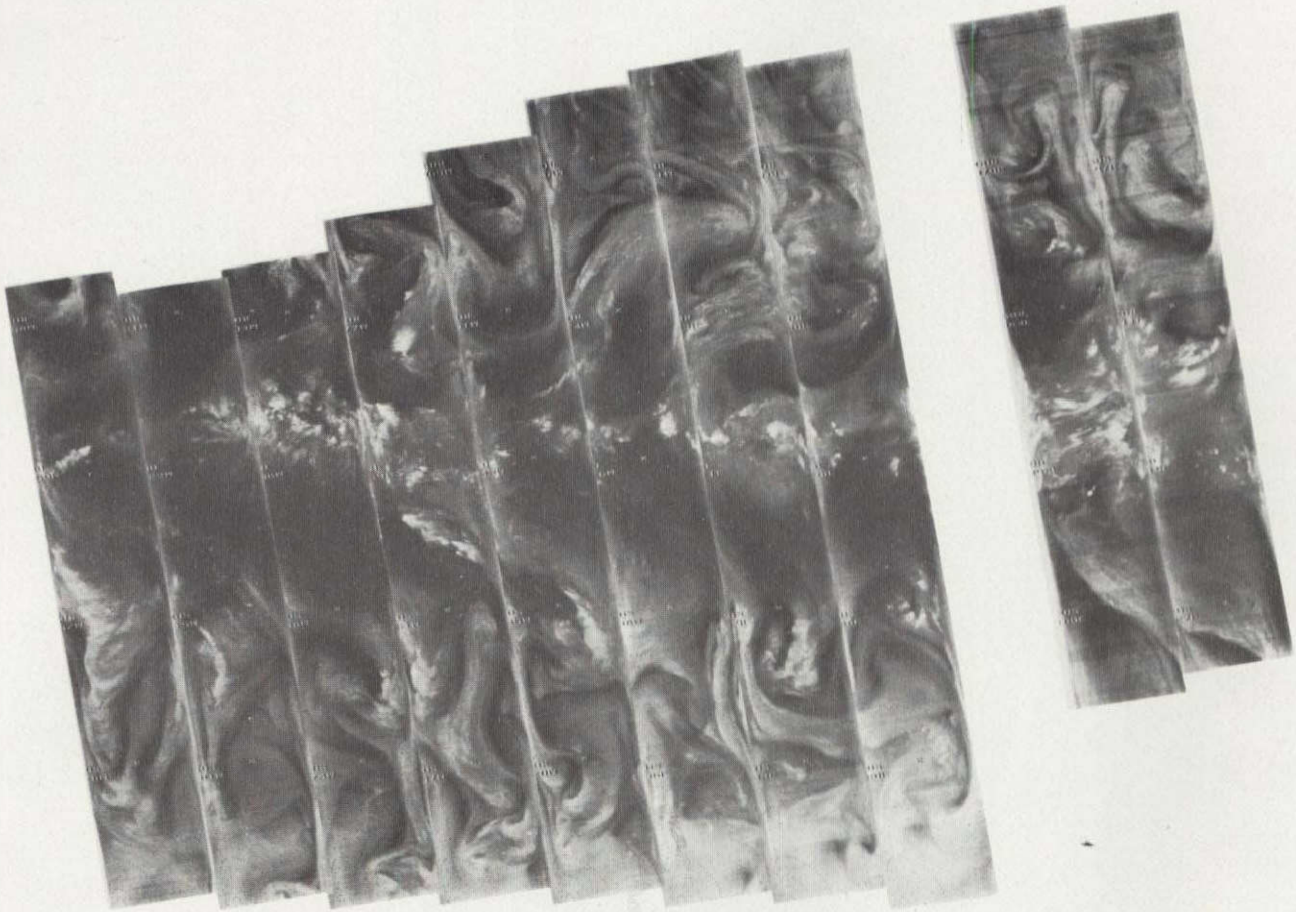
6.7μm



4726 4725 4724 4723 4722 4721 4720 4719 4718 4717 4716 4715 4714

29 MAY 1976

11.5μm



4740 4739 4738 4737 4736 4735 4734 4733 4732 4731 4730 4729 4728 4727

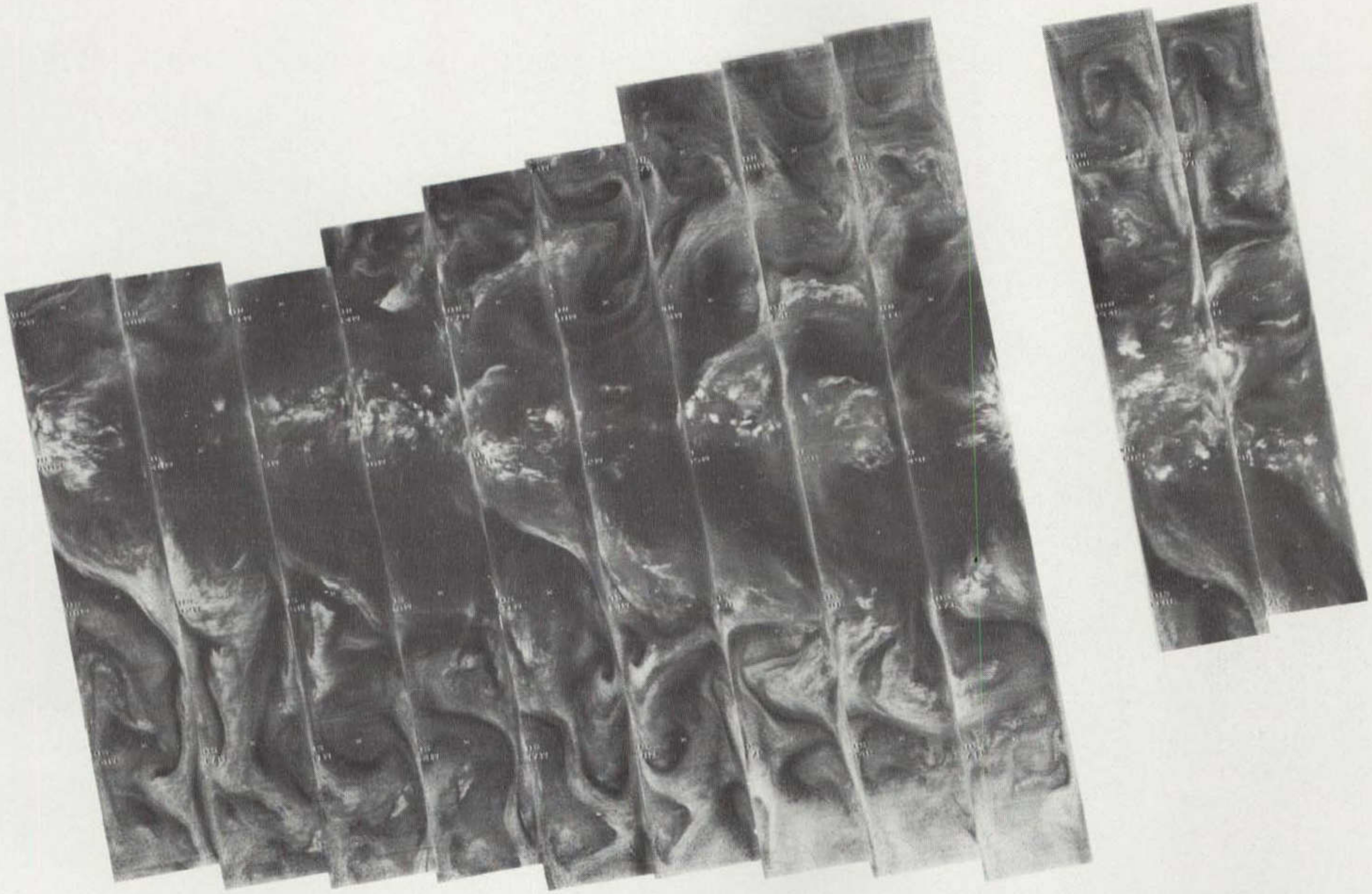
30 MAY 1976

6.7μm

4740 4739 4738 4737 4736 4735 4734 4733 4732 4731 4730 4729 4728 4727

30 MAY 1976

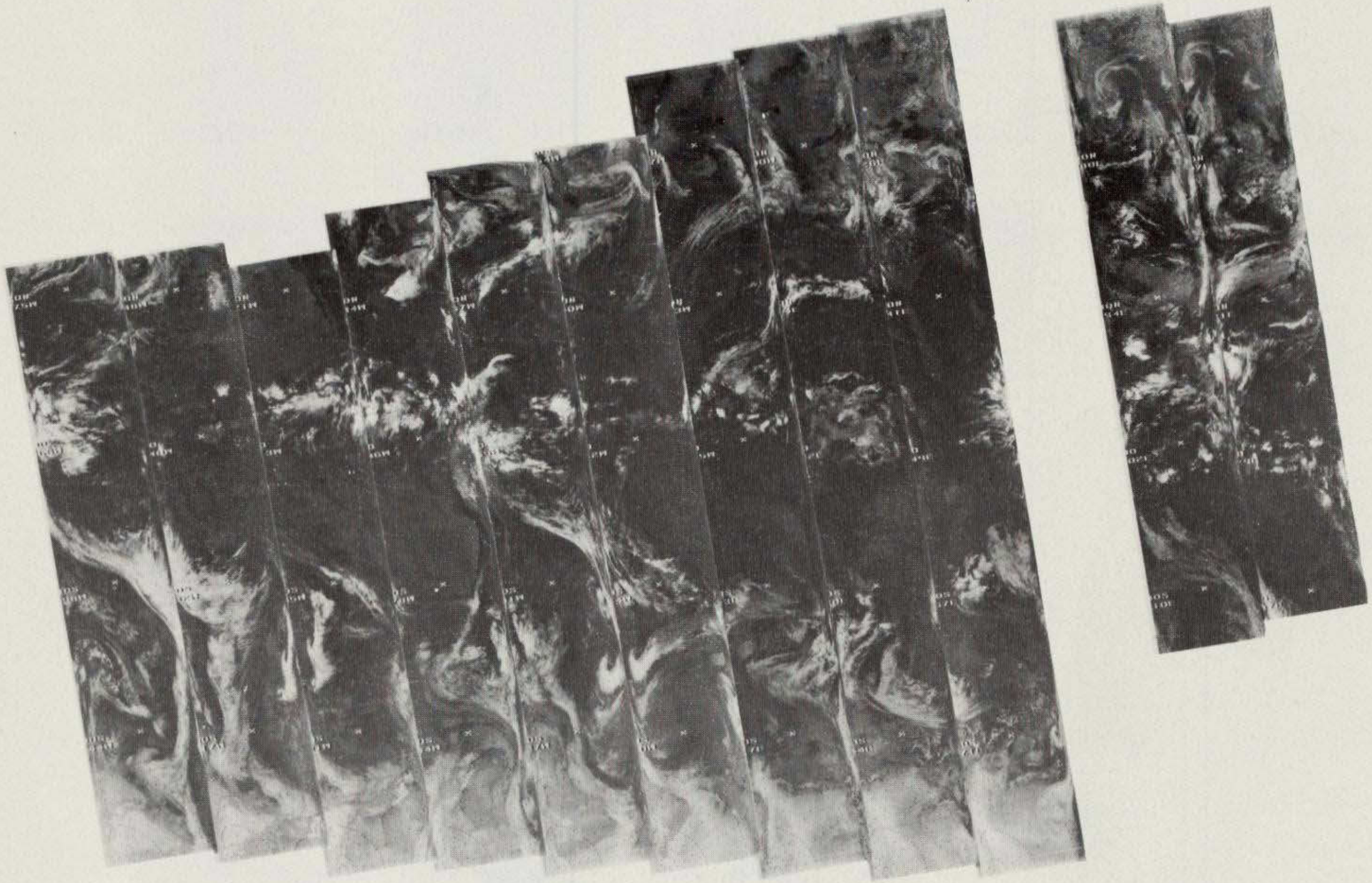
11.5μm



4753 4752 4751 4750 4749 4748 4747 4746 4745 4744 4743 4742 4741

31 MAY 1976

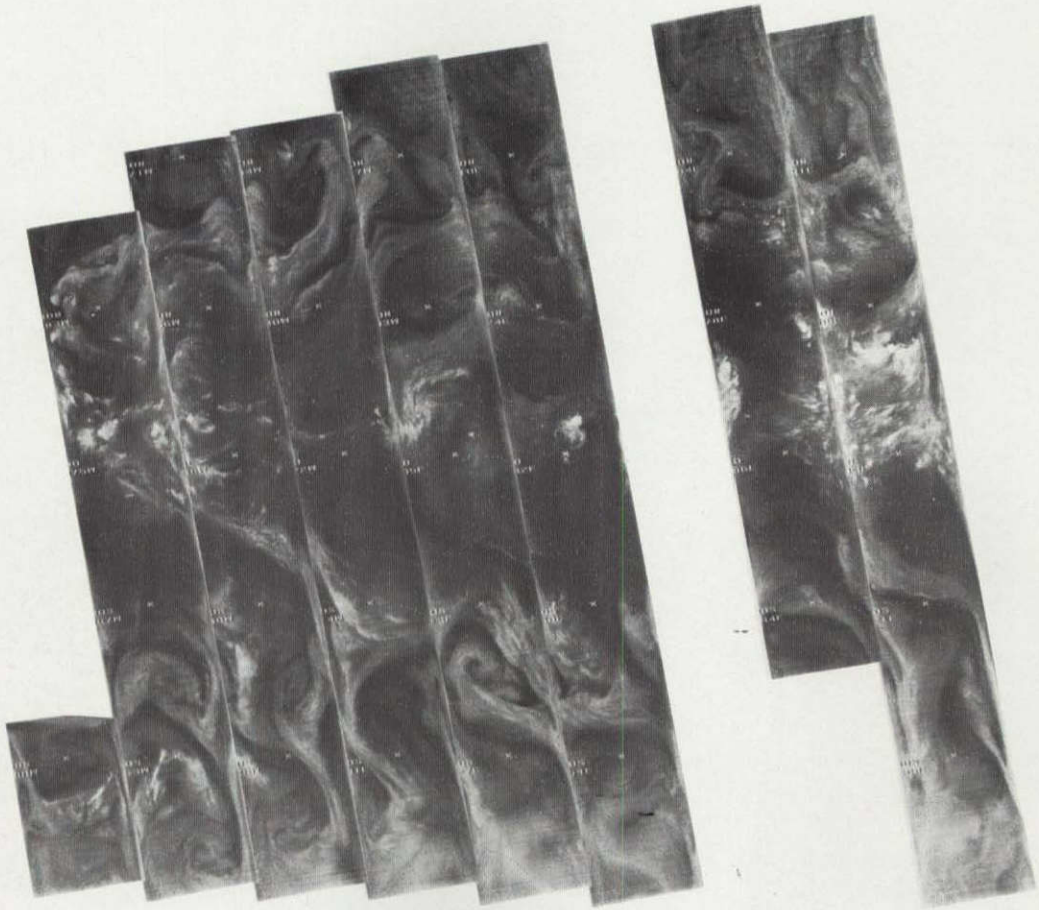
6.7μm



4753 4752 4751 4750 4749 4748 4747 4746 4745 4744 4743 4742 4741

31 MAY 1976

11.5μm



4767 4766 4765 4764 4763 4762 4761 4760 4759 4758 4757 4756 4755 4754

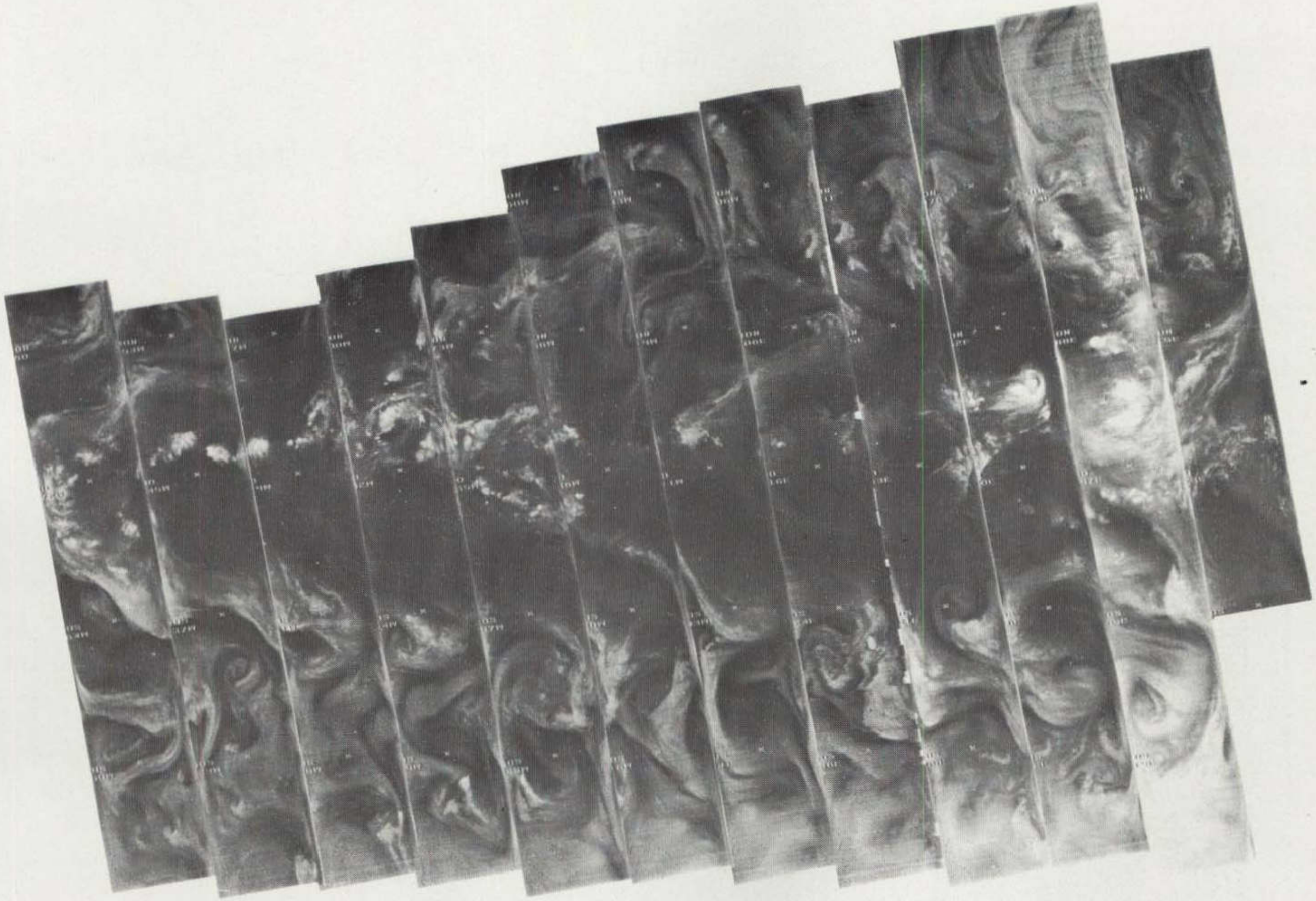
1 JUN 1976

6.7μm

4767 4766 4765 4764 4763 4762 4761 4760 4759 4758 4757 4756 4755 4754

1 JUN 1976

11.5μm



4780 4779 4778 4777 4776 4775 4774 4773 4772 4771 4770 4769 4768

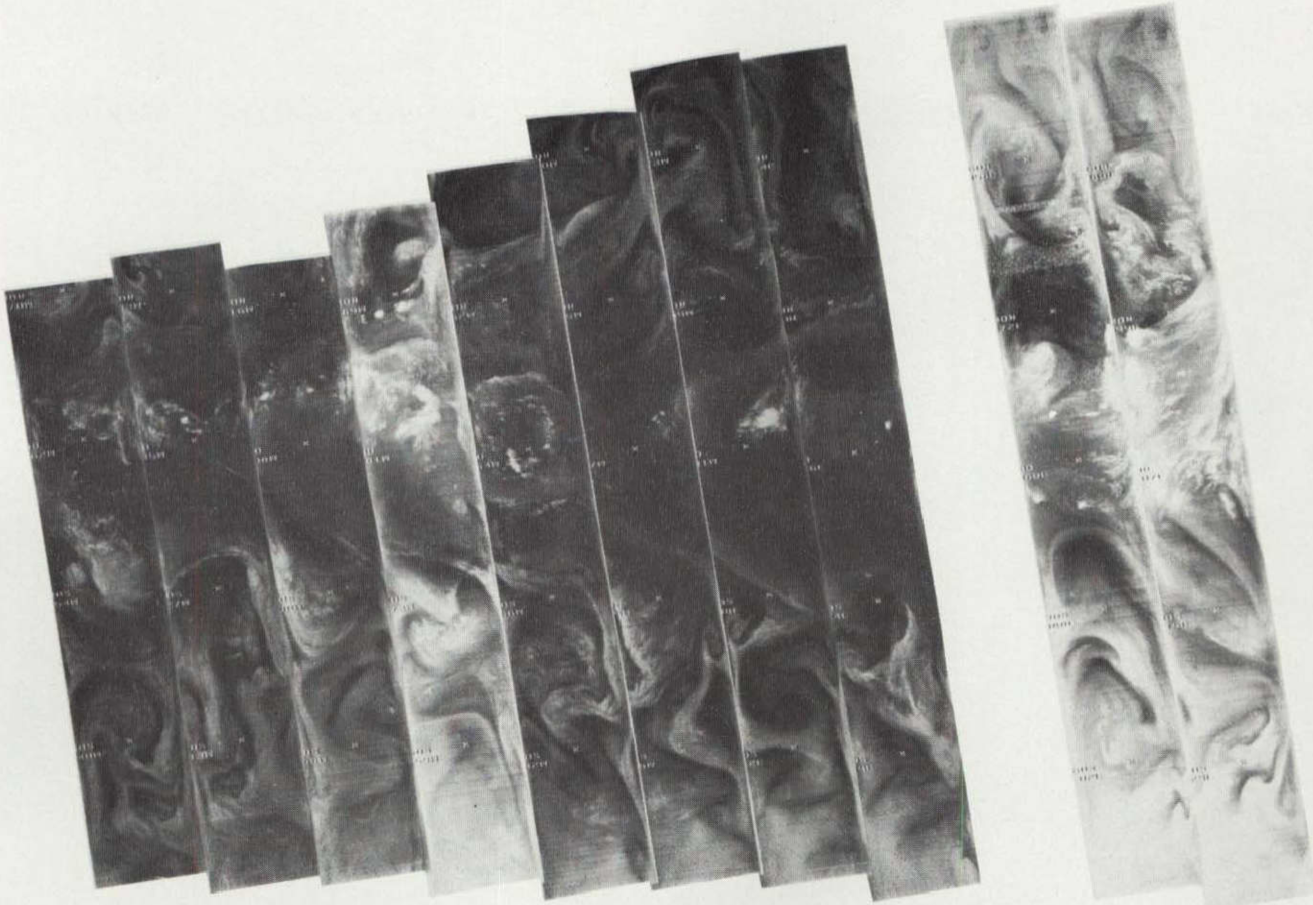
2 JUN 1976

6.7μm

4780 4779 4778 4777 4776 4775 4774 4773 4772 4771 4770 4769 4768

2 JUN 1976

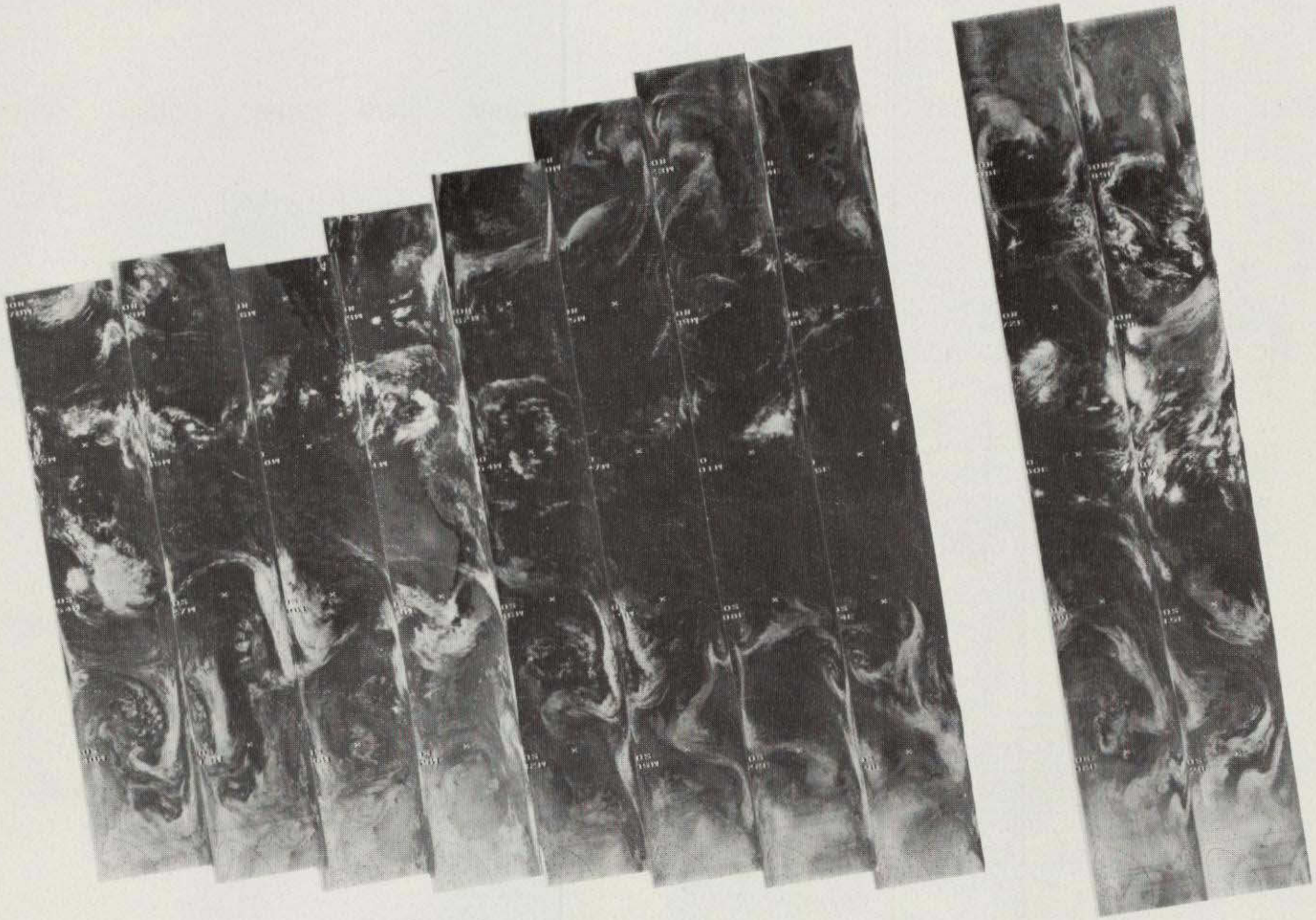
11.5μm



4793 4792 4791 4790 4789 4788 4787 4786 4785 4784 4783 4782 4781

3 JUN 1976

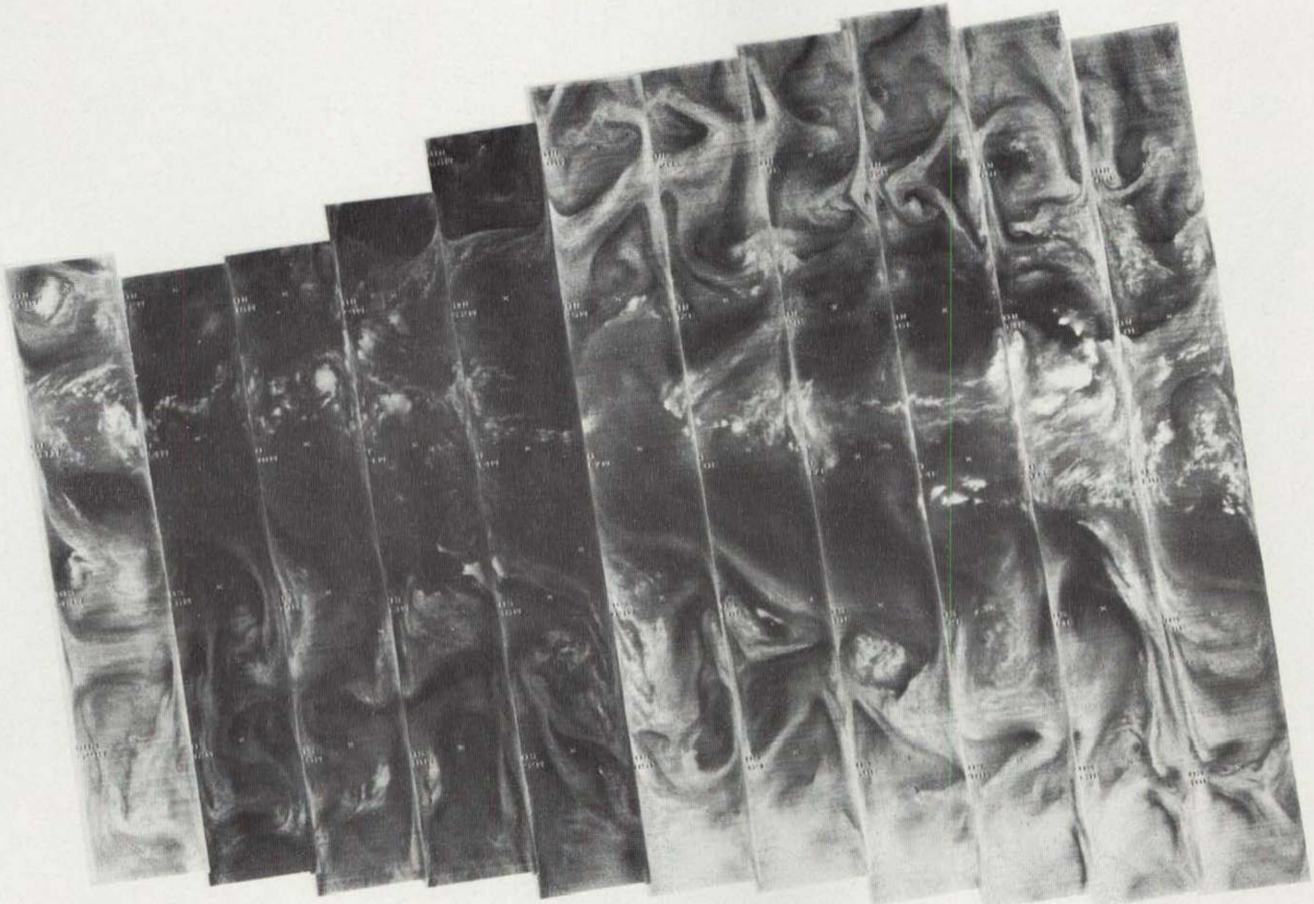
6.7μm



4793 4792 4791 4790 4789 4788 4787 4786 4785 4784 4783 4782 4781

3 JUN 1976

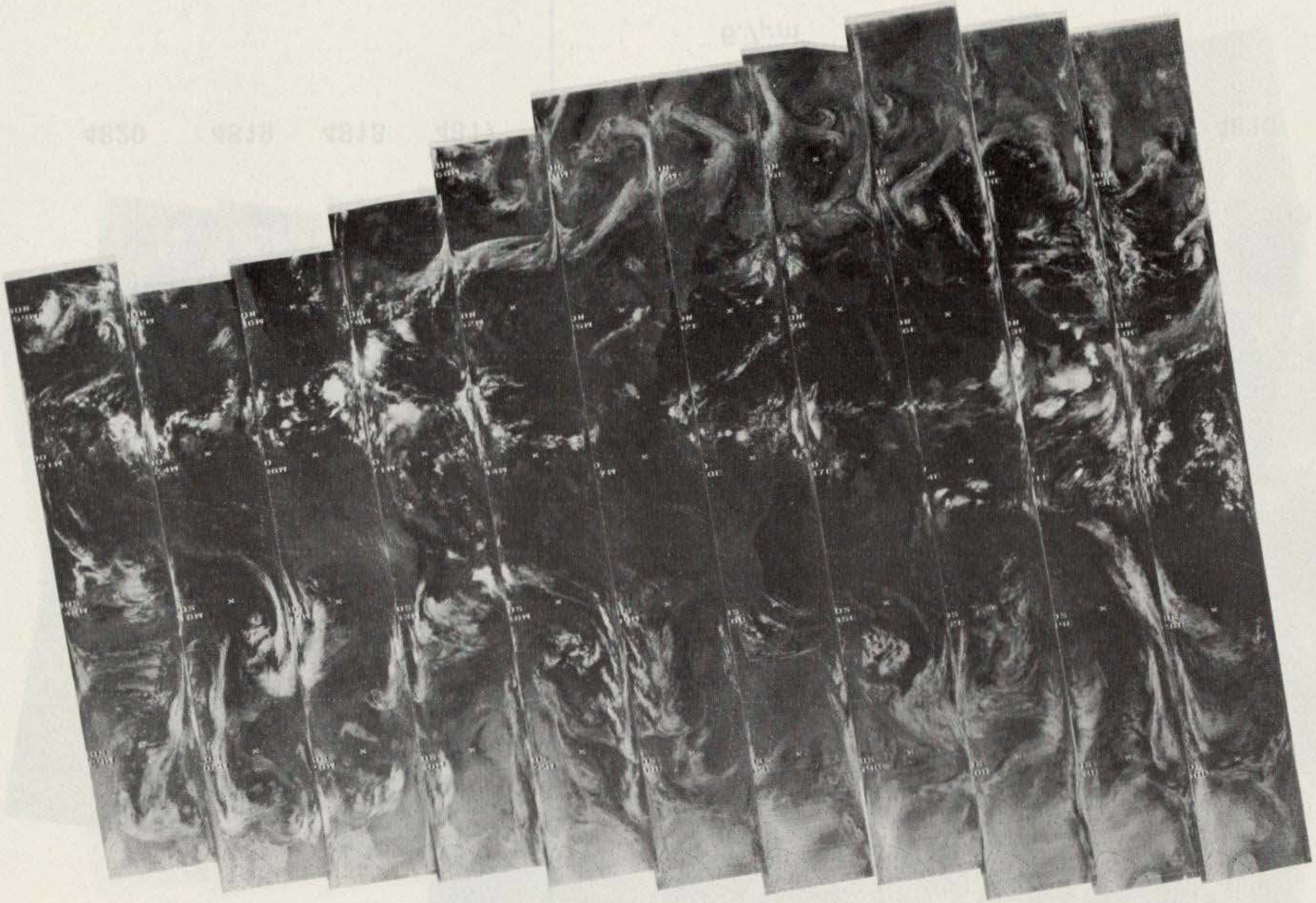
11.5μm



4807 4806 4805 4804 4803 4802 4801 4800 4799 4798 4797 4796 4795 4794

4 JUN 1976

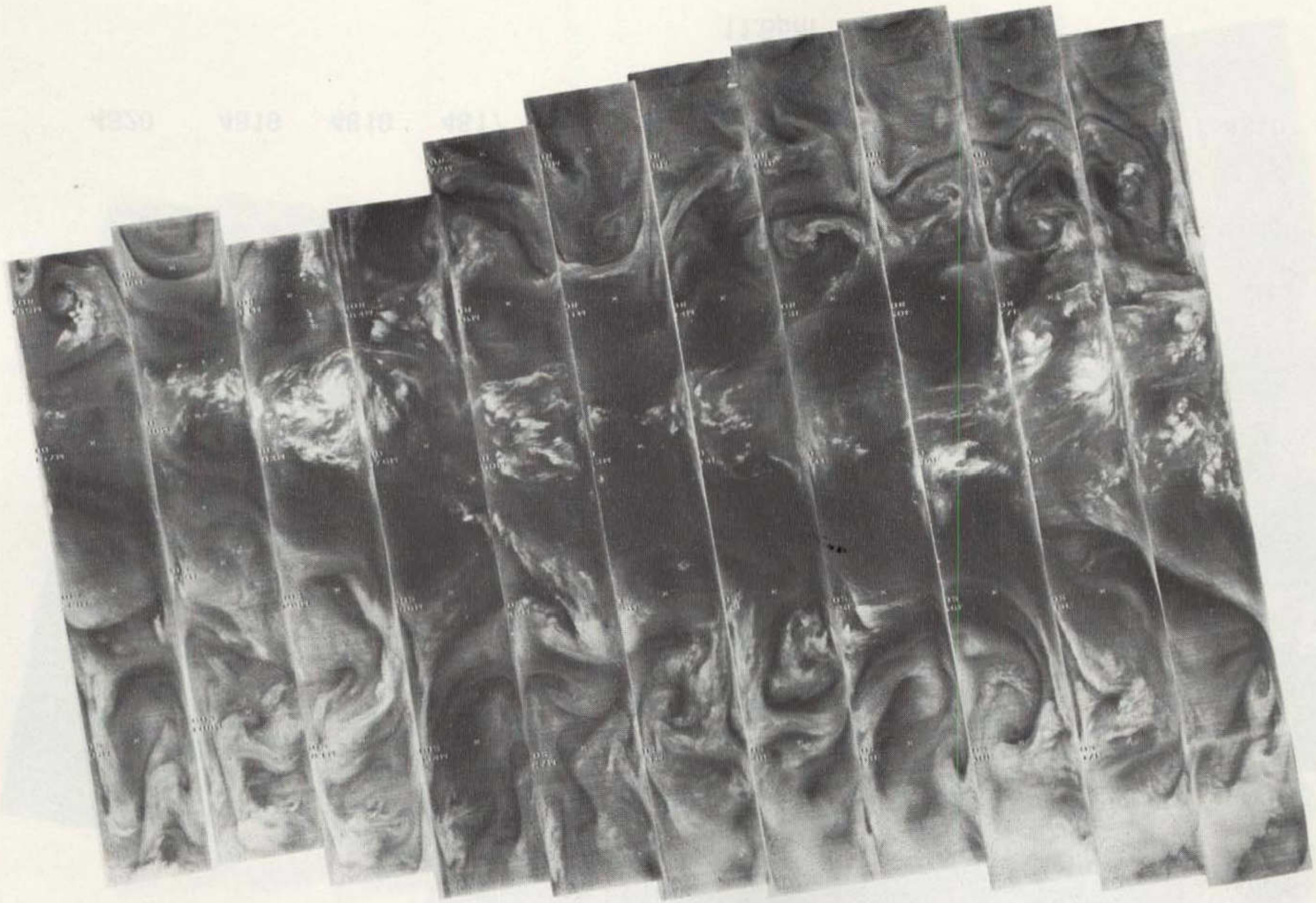
6.7μm



4807 4806 4805 4804 4803 4802 4801 4800 4799 4798 4797 4796 4795 4794

4 JUN 1976

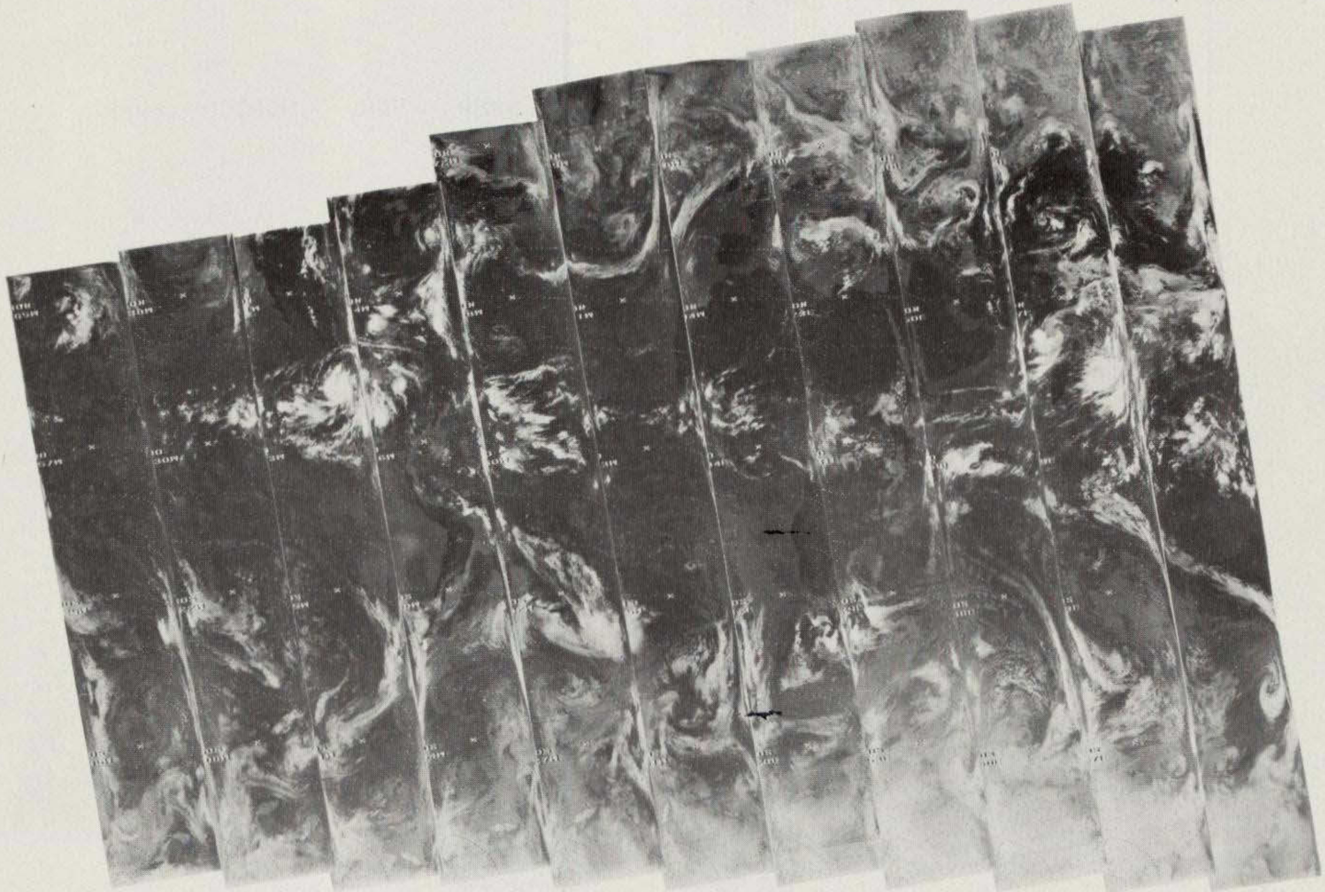
11.5μm



4834 4833 4832 4831 4830 4829 4828 4827 4826 4825 4824 4823 4822 4821

6 JUN 1976

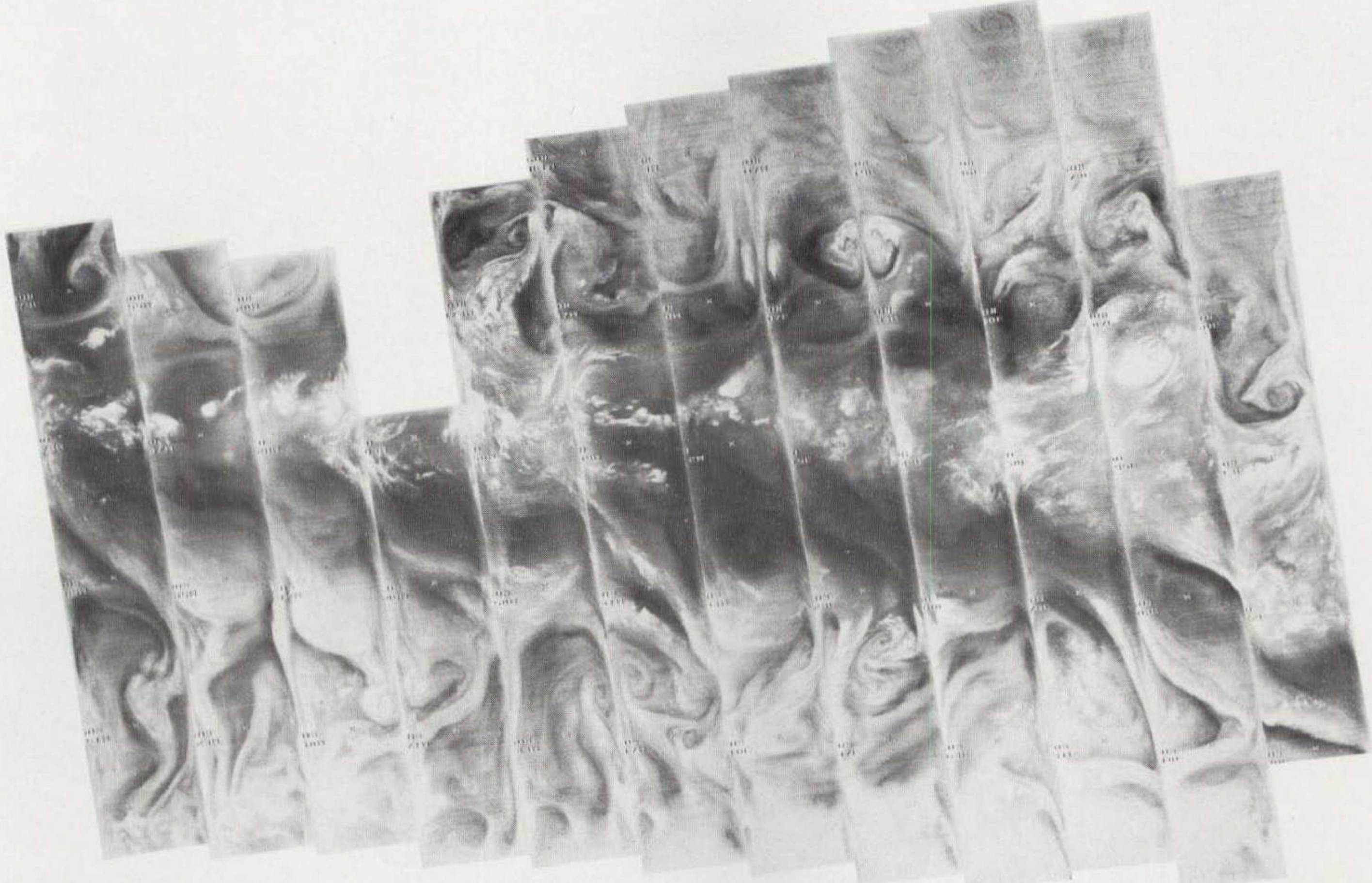
6.7μm



4834 4833 4832 4831 4830 4829 4828 4827 4826 4825 4824 4823 4822 4821

6 JUN 1976

11.5μm



4847 4846 4845 4844 4843 4842 4841 4840 4839 4838 4837 4836 4835

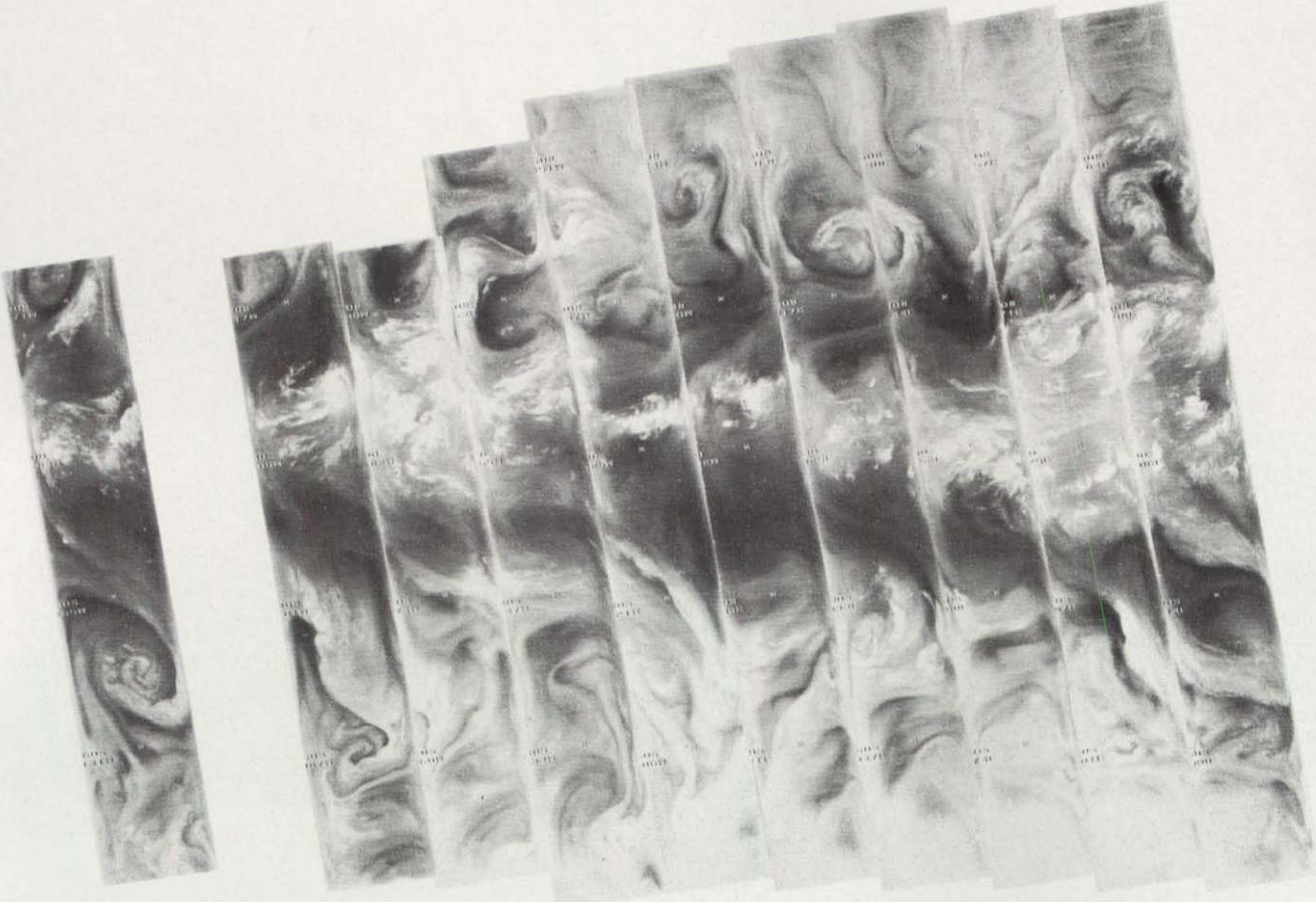
7 JUN 1976

6.7μm

4847 4846 4845 4844 4843 4842 4841 4840 4839 4838 4837 4836 4835

7 JUN 1976

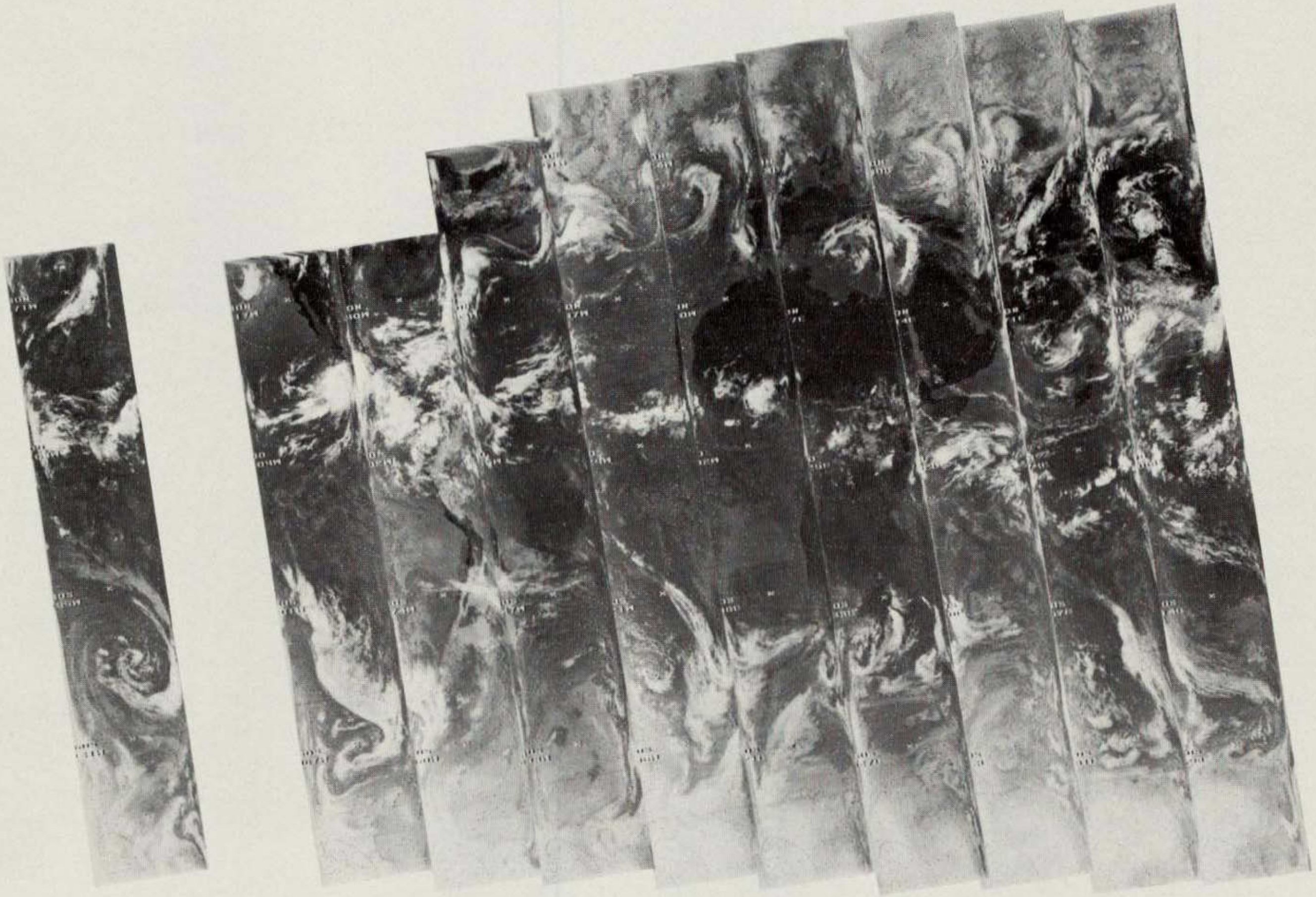
11.5μm



4860 4859 4858 4857 4856 4855 4854 4853 4852 4851 4850 4849 4848

8 JUN 1976

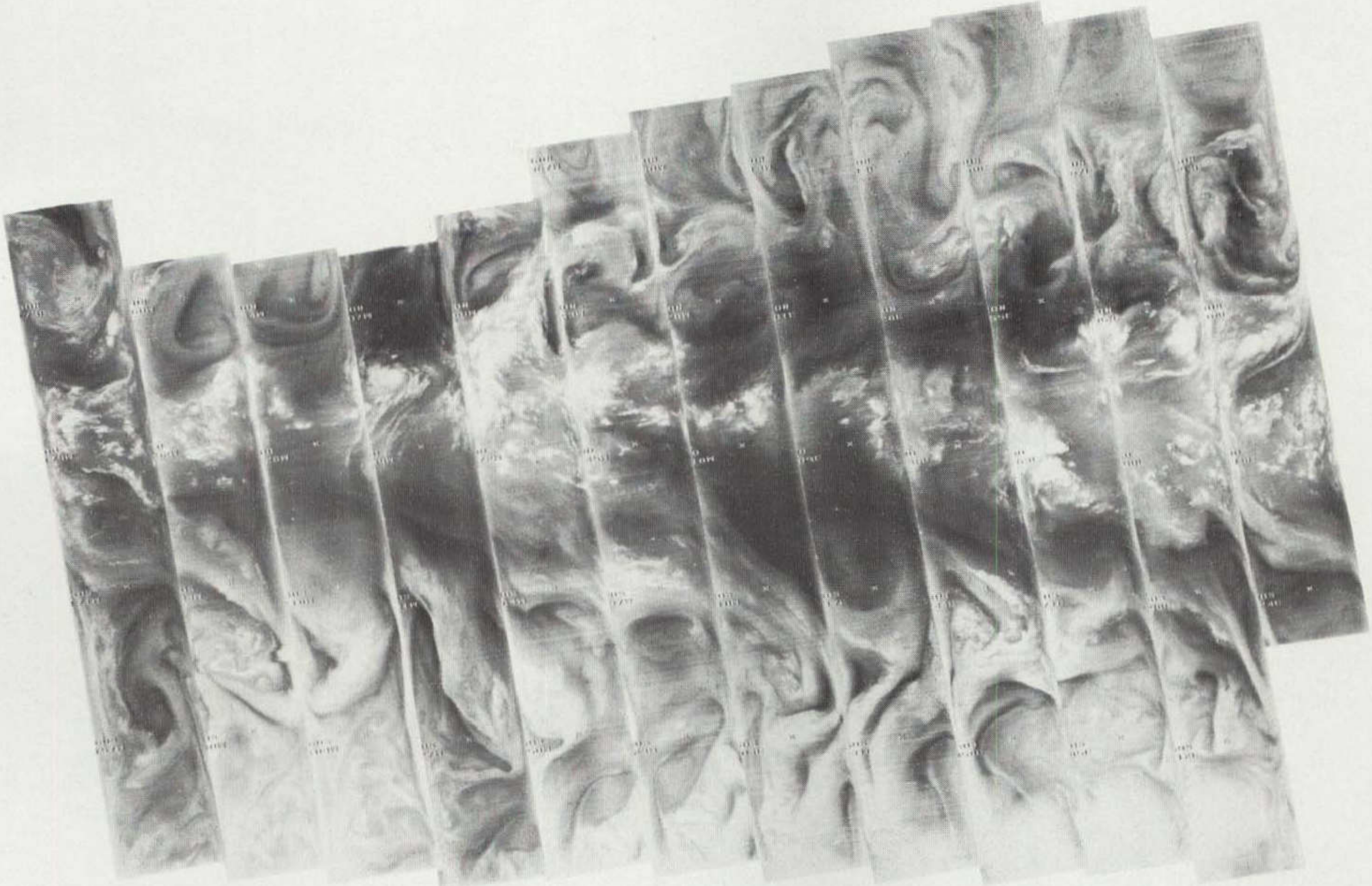
6.7μm



4860 4859 4858 4857 4856 4855 4854 4853 4852 4851 4850 4849 4848

8 JUN 1976

11.5μm



4874 4873 4872 4871 4870 4869 4868 4867 4866 4865 4864 4863 4862 4861

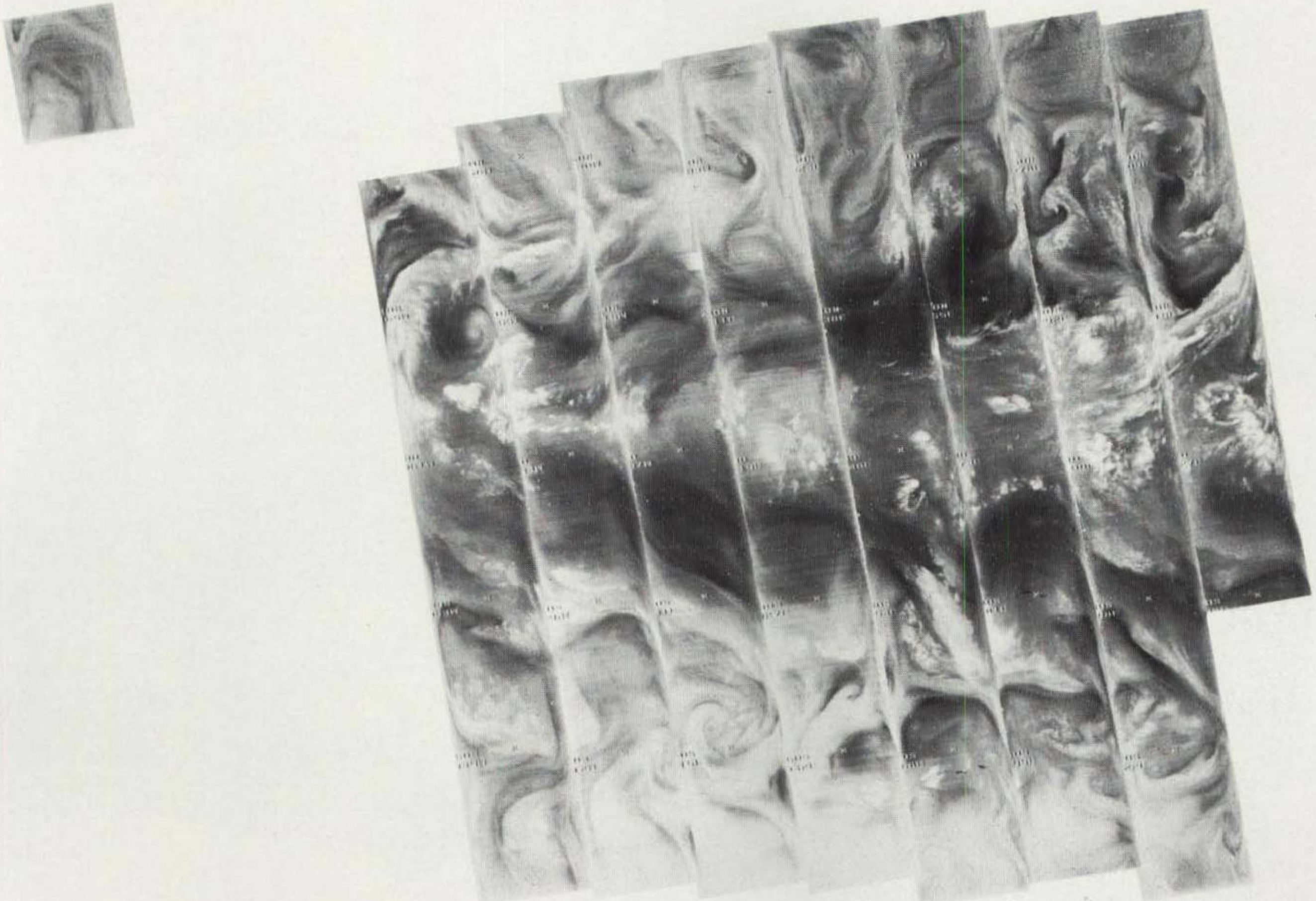
9 JUN 1976

6.7μm

4874 4873 4872 4871 4870 4869 4868 4867 4866 4865 4864 4863 4862 4861

9 JUN 1976

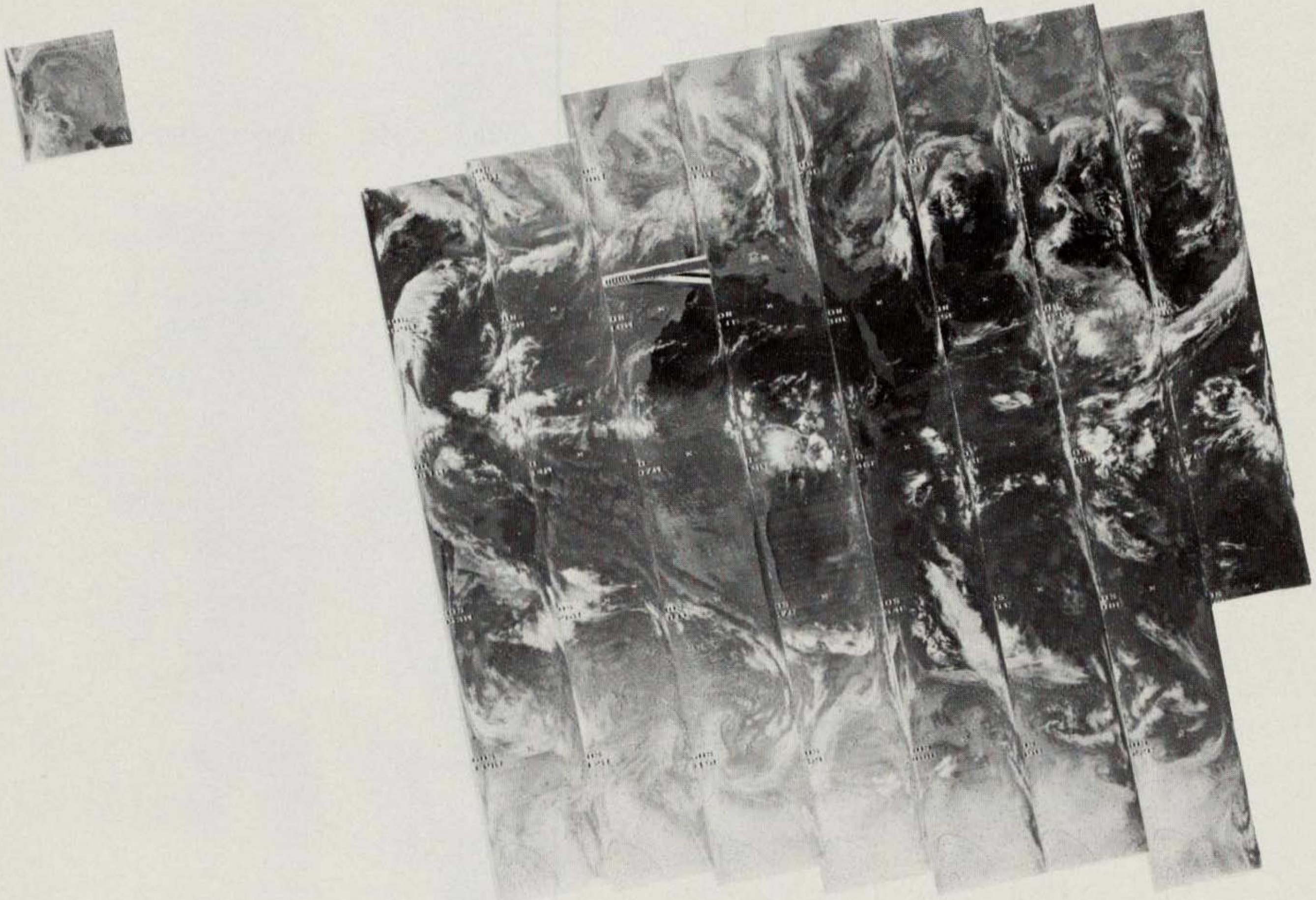
11.5μm



4887 4886 4885 4884 4883 4882 4881 4880 4879 4878 4877 4876 4875

10 JUN 1976

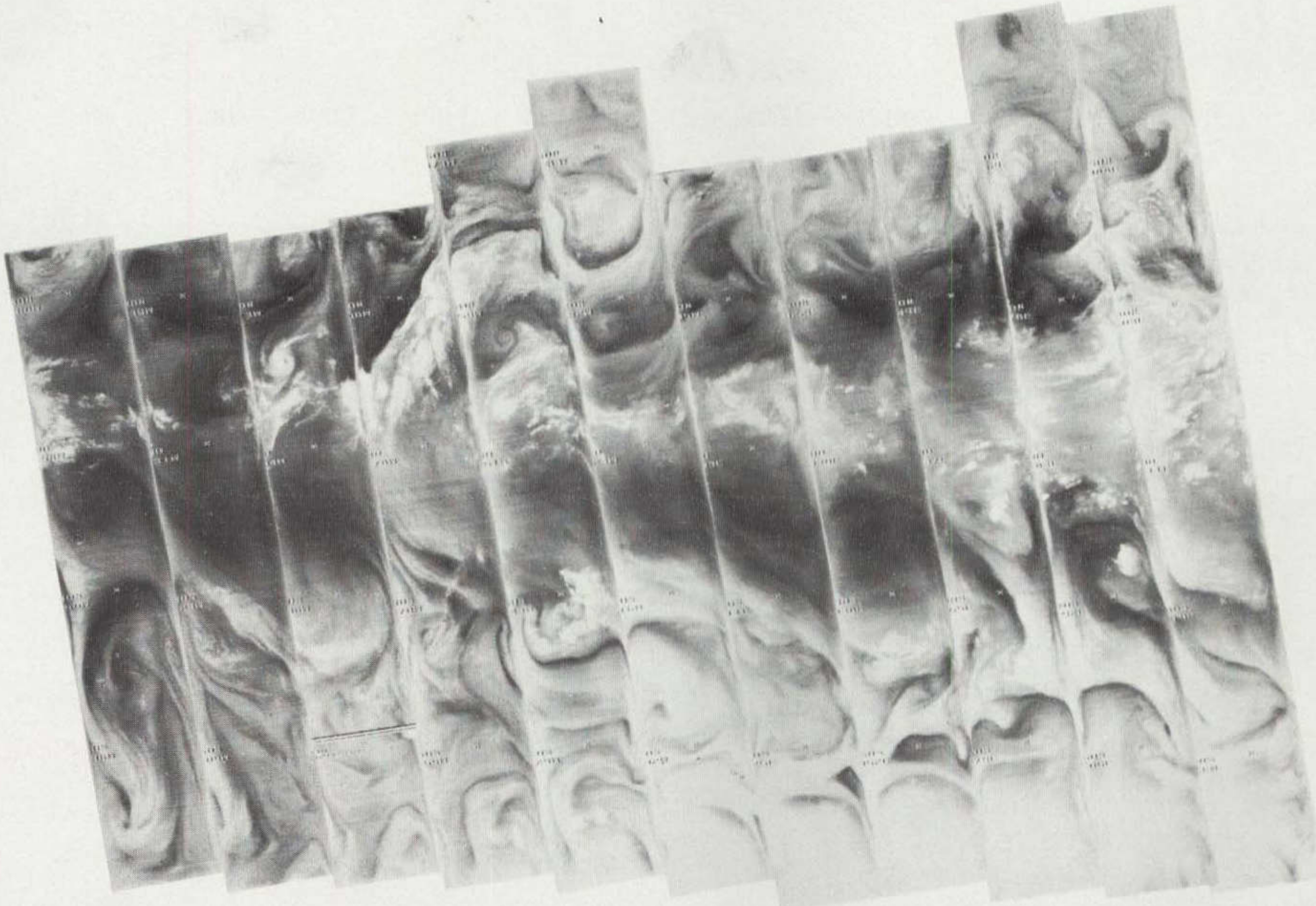
6.7μm



4887 4886 4885 4884 4883 4882 4881 4880 4879 4878 4877 4876 4875

10 JUN 1976

11.5μm



4900 4899 4898 4897 4896 4895 4894 4893 4892 4891 4890 4889 4888

11 JUN 1976

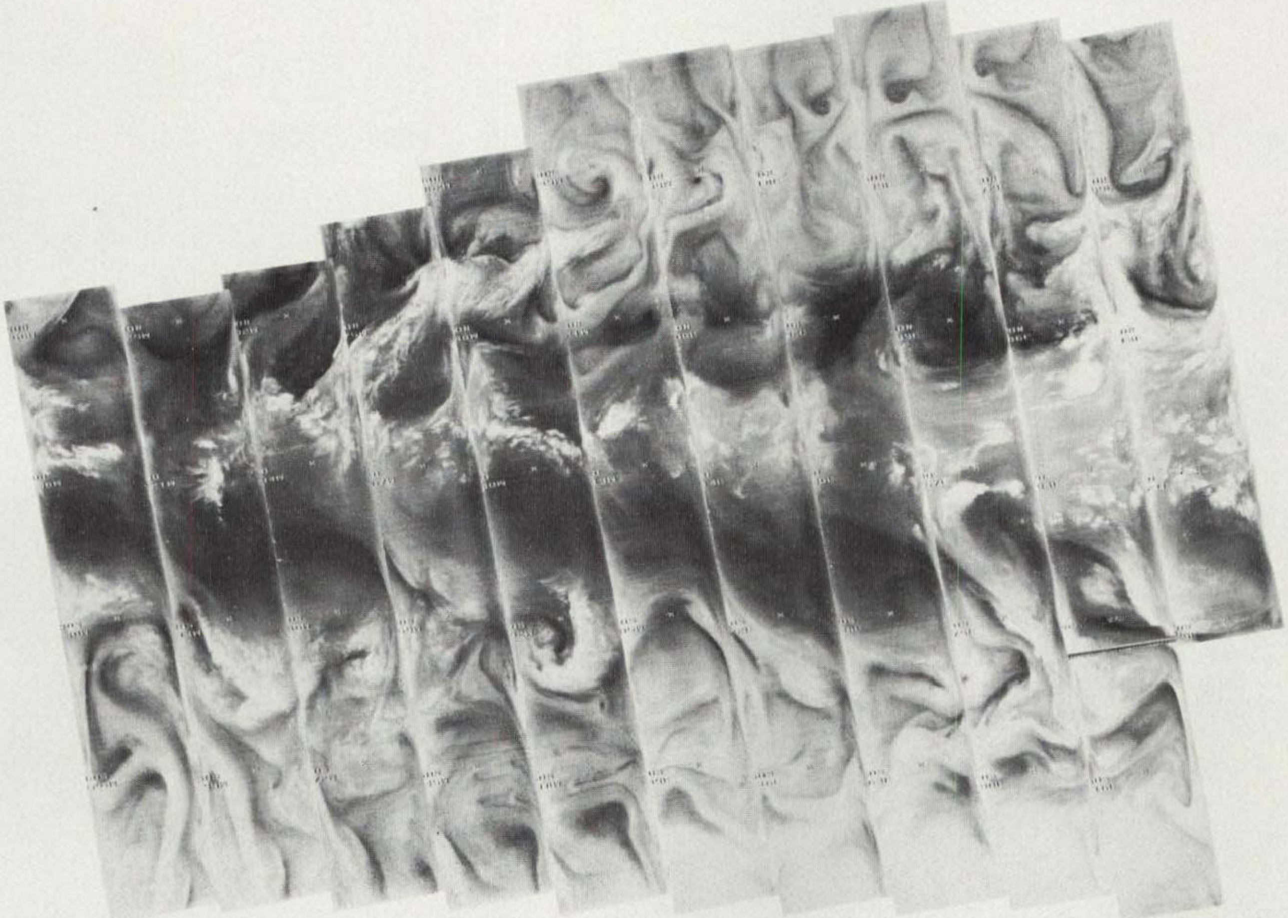
6.7μm

C-4

4900 4899 4898 4897 4896 4895 4894 4893 4892 4891 4890 4889 4888

11 JUN 1976

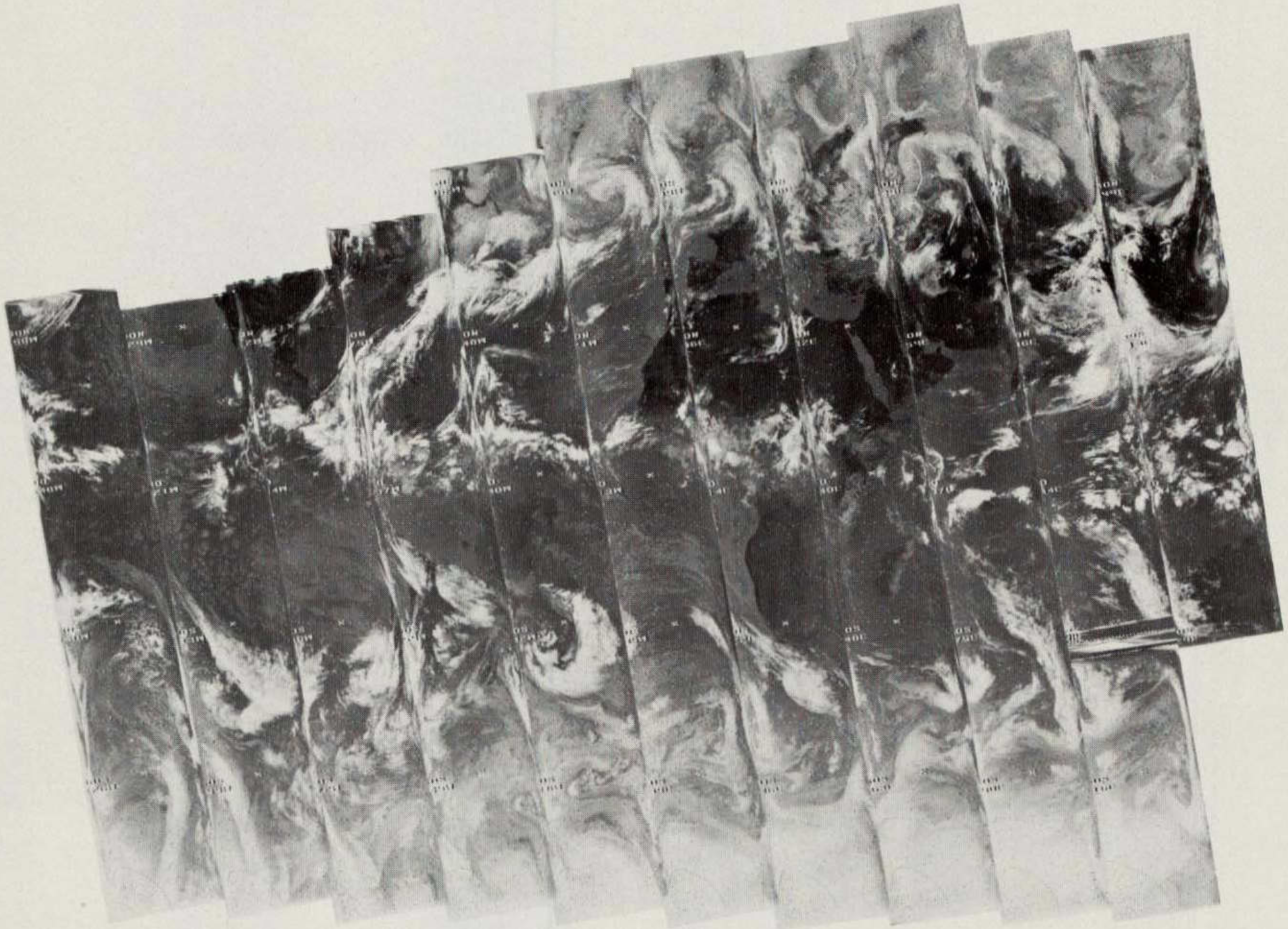
11.5μm



4914 4913 4912 4911 4910 4909 4908 4907 4906 4905 4904 4903 4902 4901

12 JUN 1976

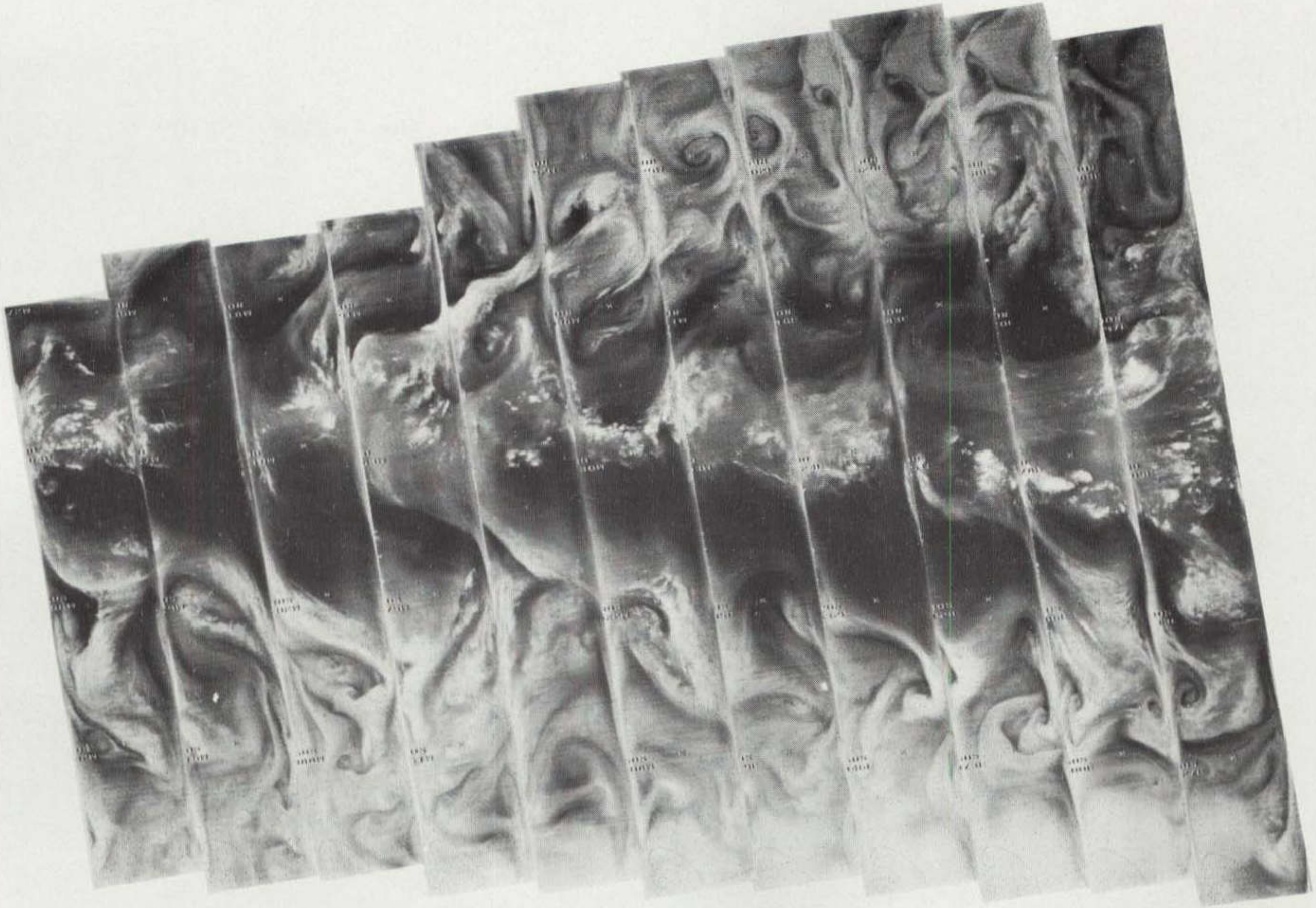
6.7μm



4914 4913 4912 4911 4910 4909 4908 4907 4906 4905 4904 4903 4902 4901

12 JUN 1976

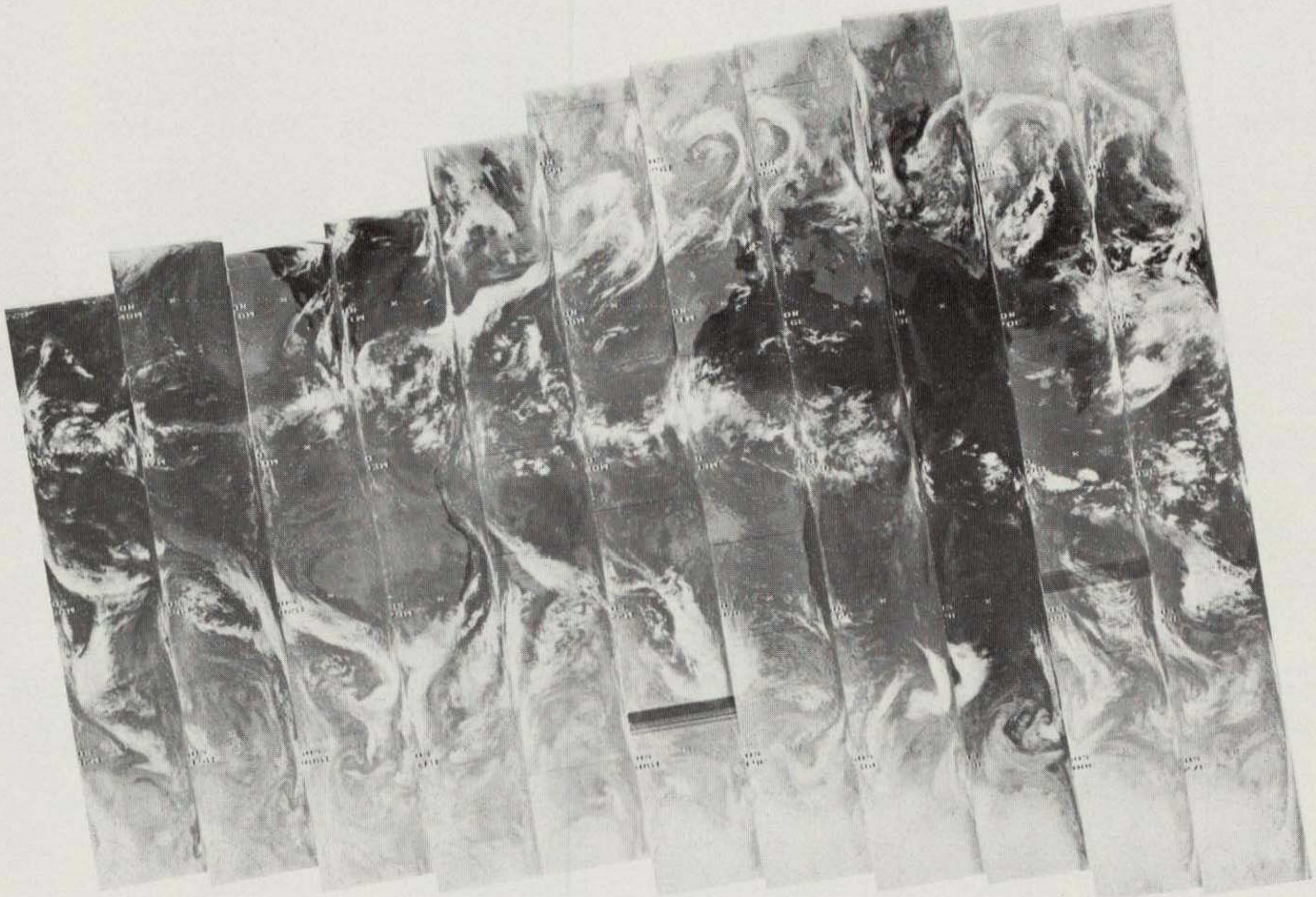
11.5μm



4927 4926 4925 4924 4923 4922 4921 4920 4919 4918 4917 4916 4915

13 JUN 1976

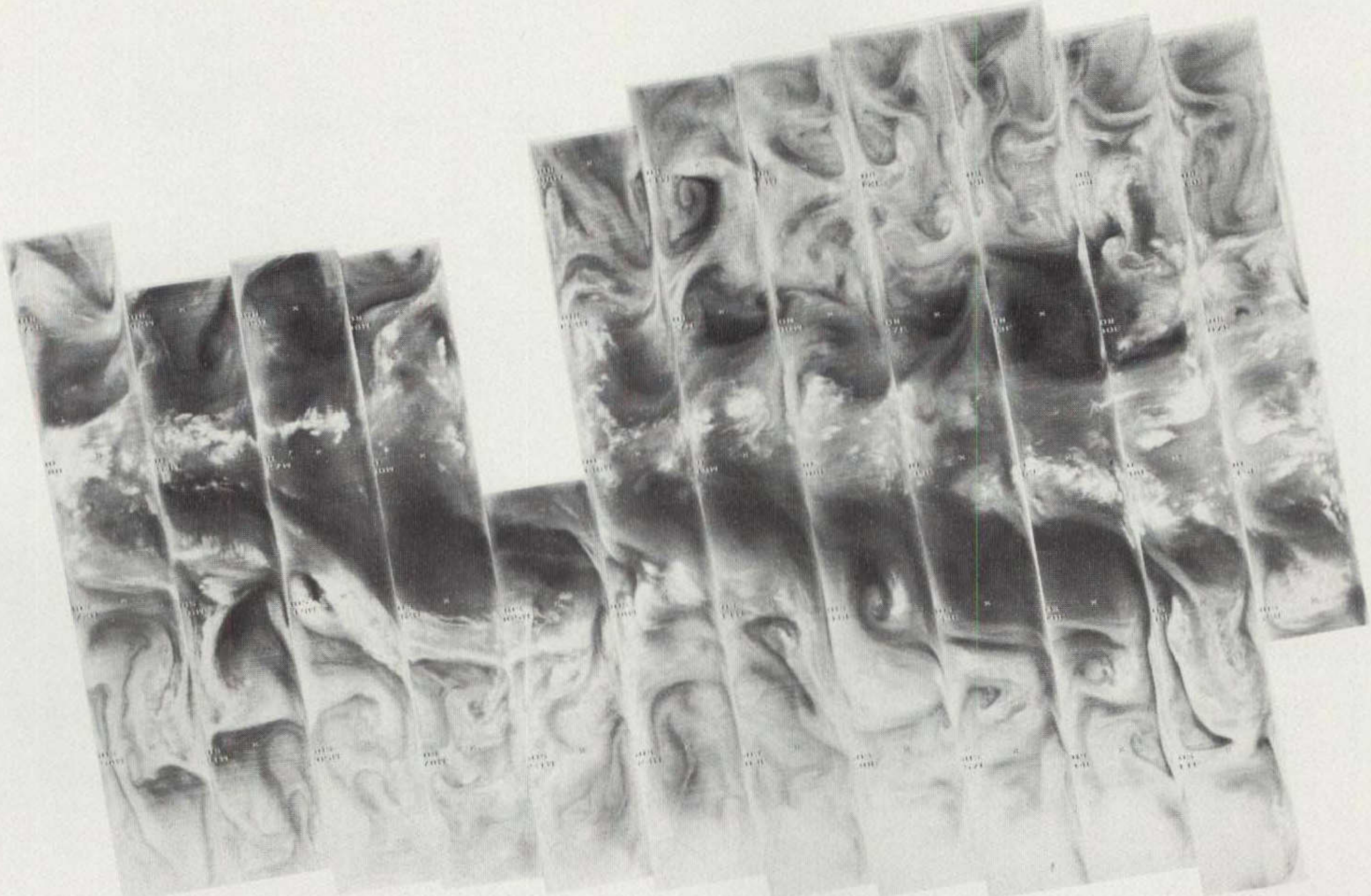
6.7μm



4927 4926 4925 4924 4923 4922 4921 4920 4919 4918 4917 4916 4915

13 JUN 1976

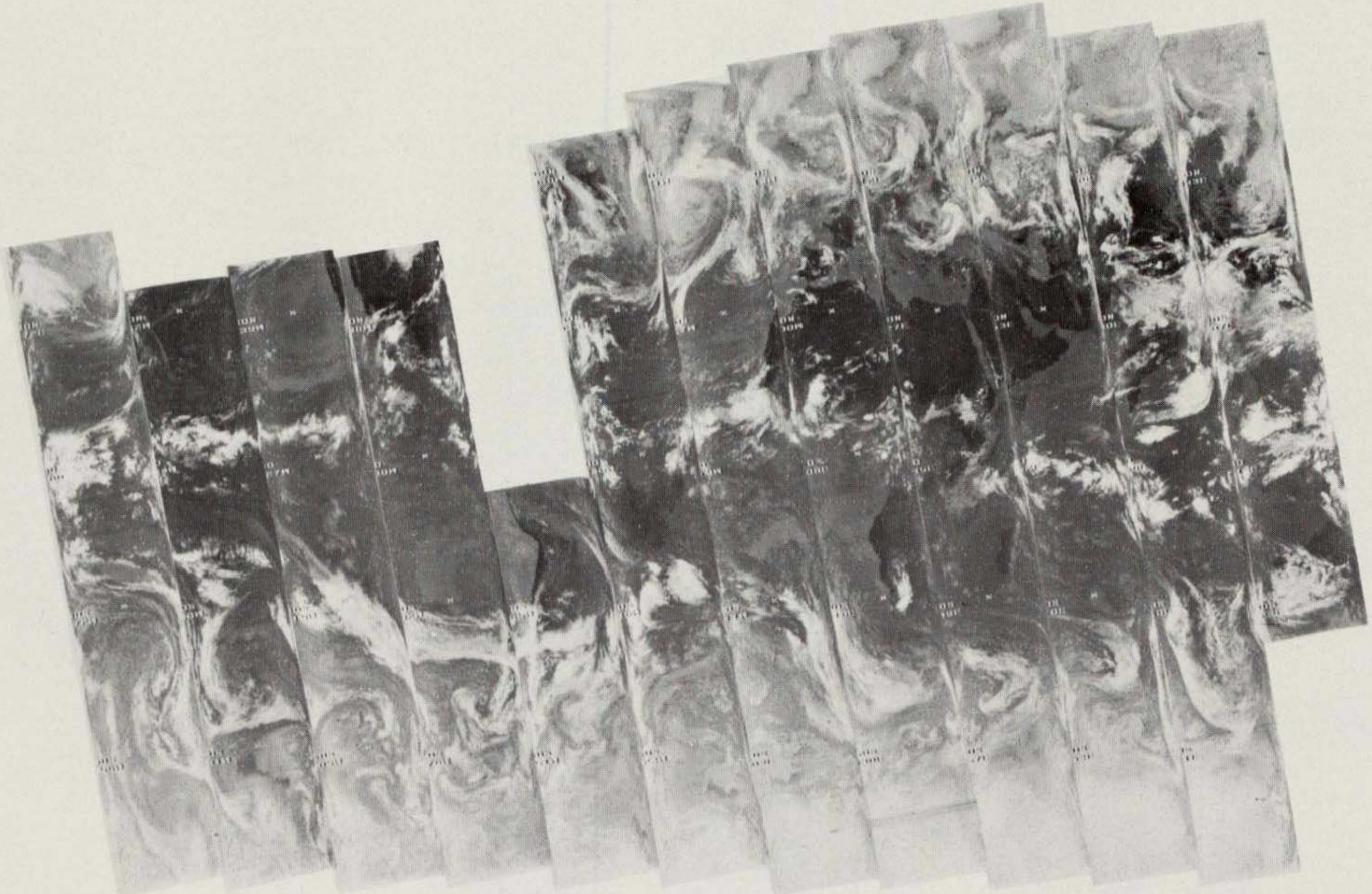
11.5μm



4941 4940 4939 4938 4937 4936 4935 4934 4933 4932 4931 4930 4929 4928

14 JUN 1976

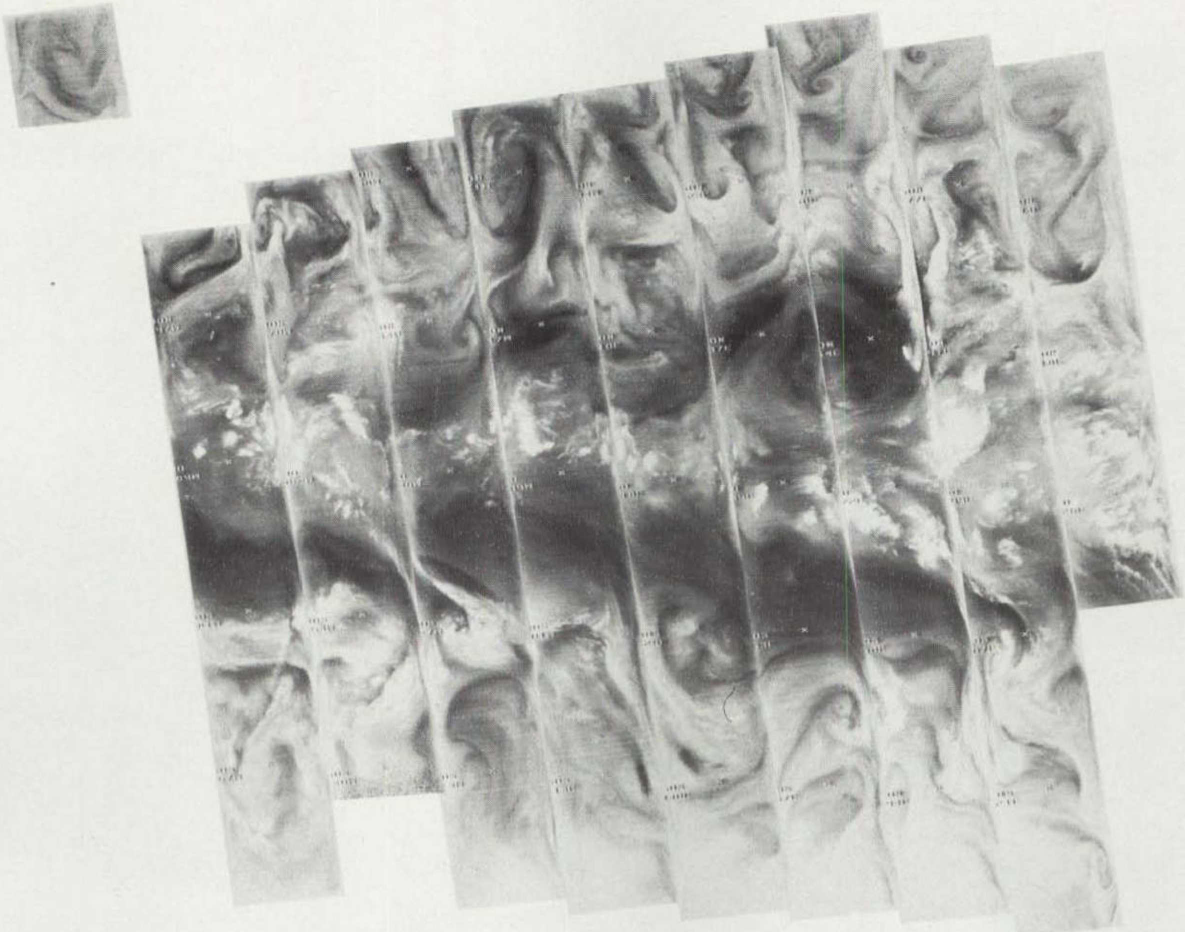
6.7μm



4941 4940 4939 4938 4937 4936 4935 4934 4933 4932 4931 4930 4929 4928

14 JUN 1976

11.5μm



4954 4953 4952 4951 4950 4949 4948 4947 4946 4945 4944 4943 4942

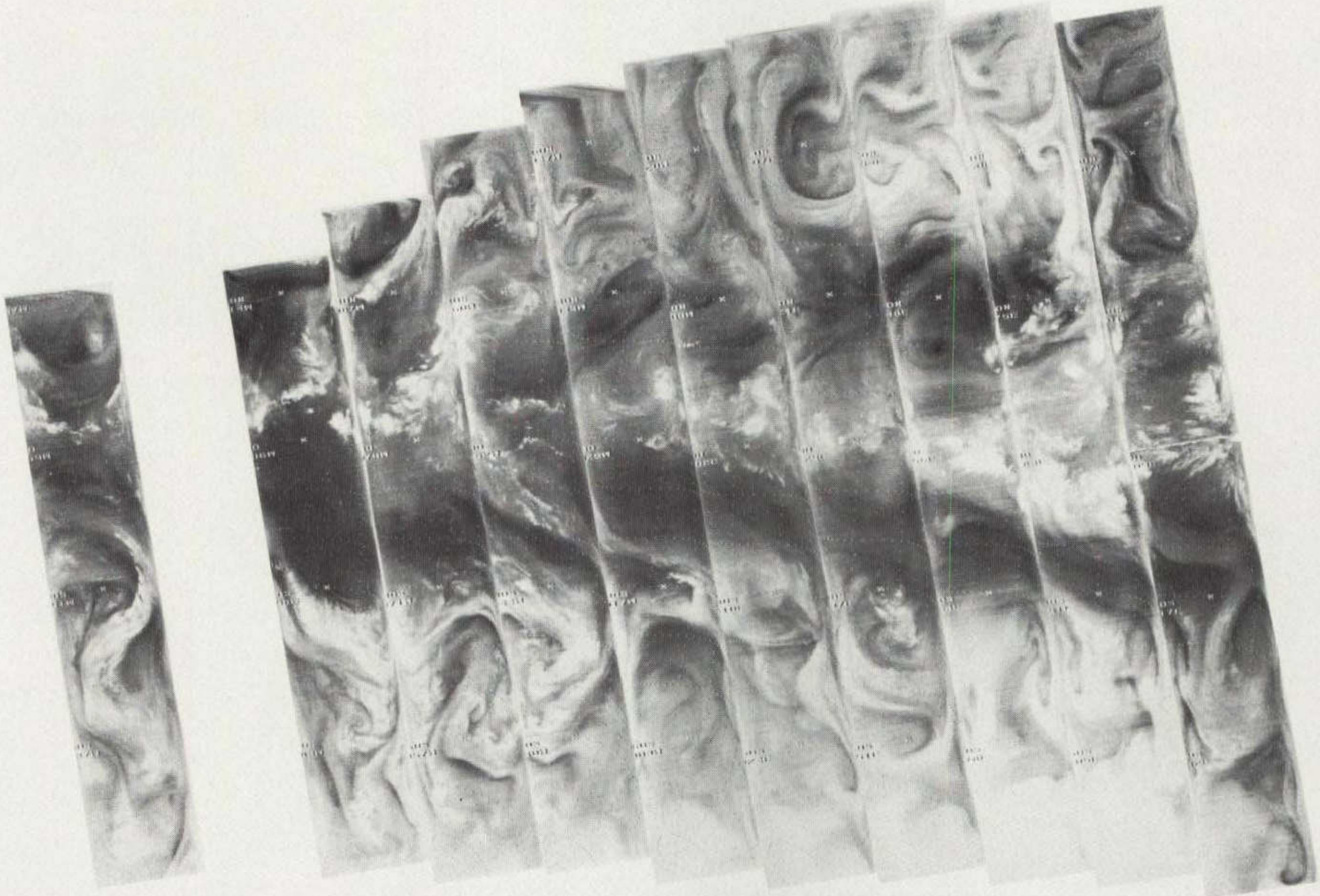
15 JUN 1976

6.7μm

4954 4953 4952 4951 4950 4949 4948 4947 4946 4945 4944 4943 4942

15 JUN 1976

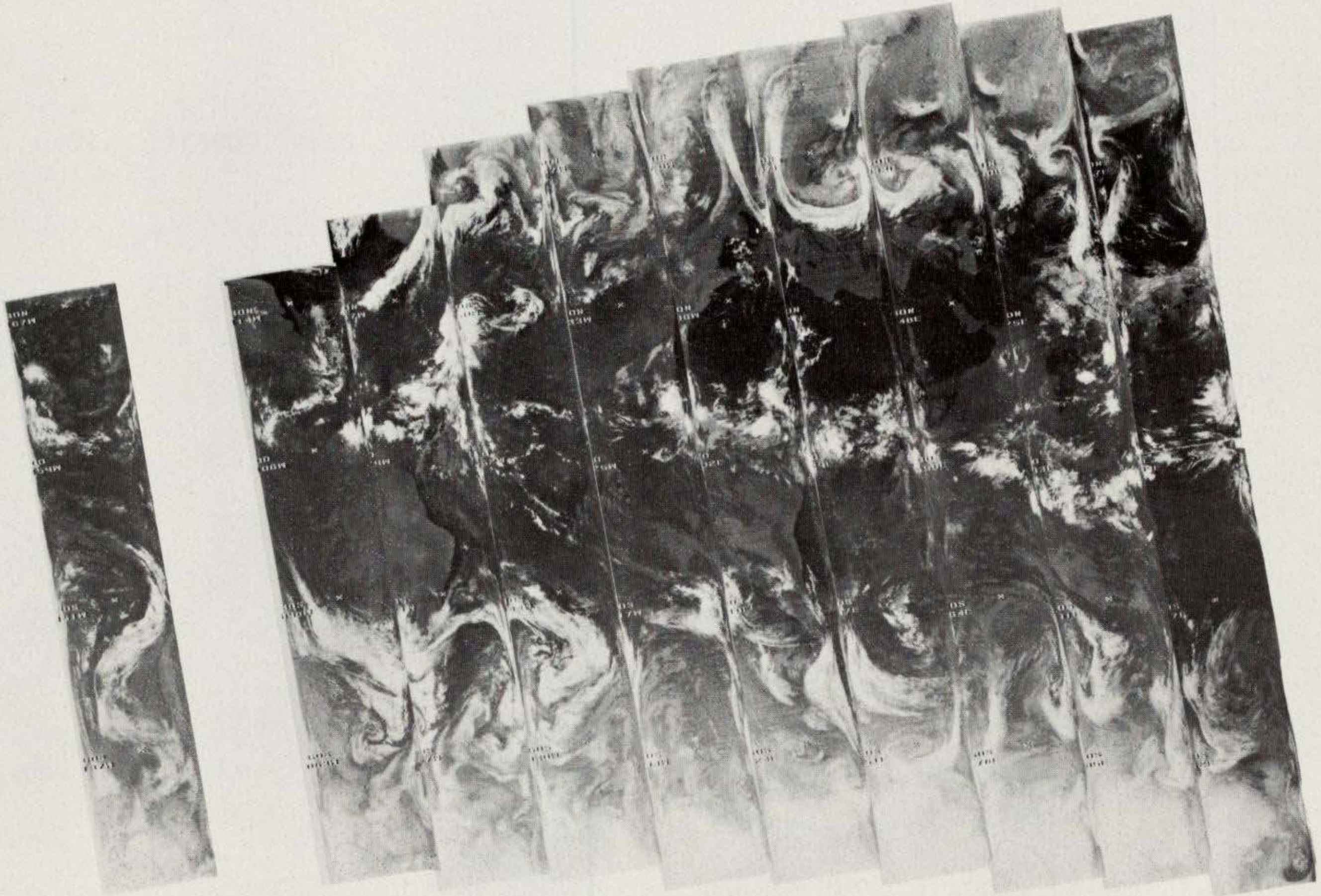
11.5μm



4967 4966 4965 4964 4963 4962 4961 4960 4959 4958 4957 4956 4955

16 JUN 1976

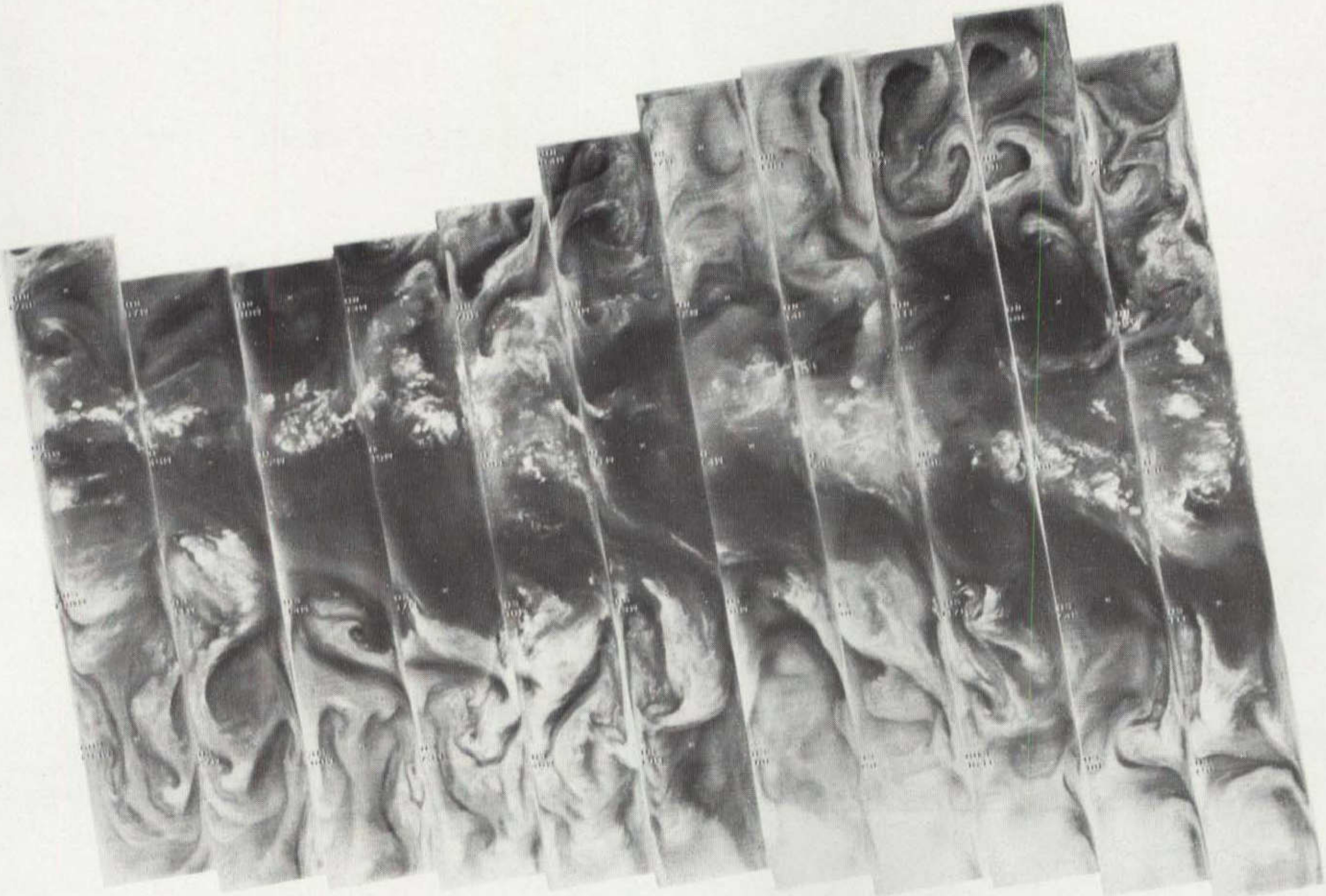
6.7μm



4967 4966 4965 4964 4963 4962 4961 4960 4959 4958 4957 4956 4955

16 JUN 1976

11.5μm



4981 4980 4979 4978 4977 4976 4975 4974 4973 4972 4971 4970 4969 4968

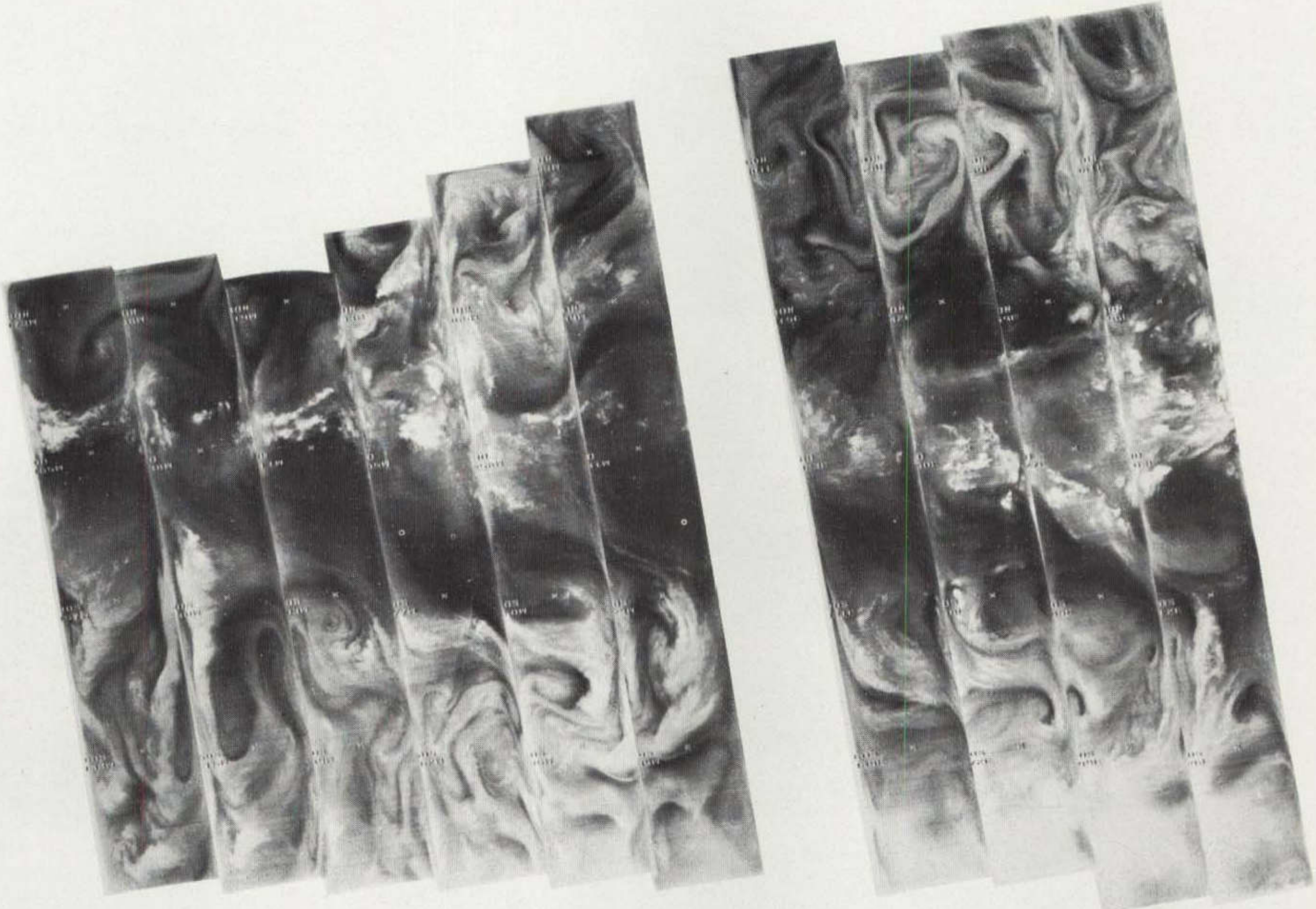
17 JUN 1976

6.7μm

4981 4980 4979 4978 4977 4976 4975 4974 4973 4972 4971 4970 4969 4968

17 JUN 1976

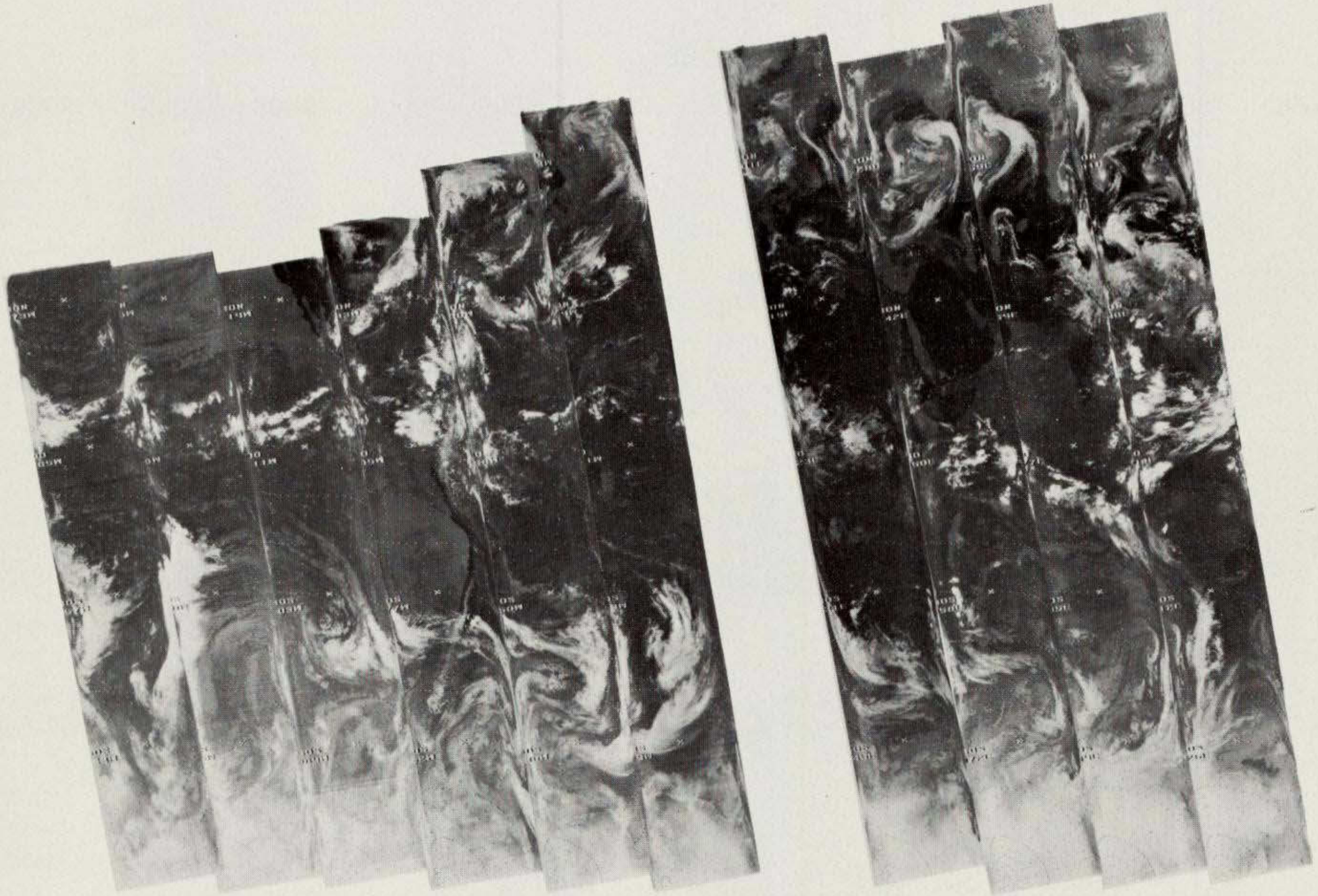
11.5μm



4994 4993 4992 4991 4990 4989 4988 4987 4986 4985 4984 4983 4982

18 JUN 1976

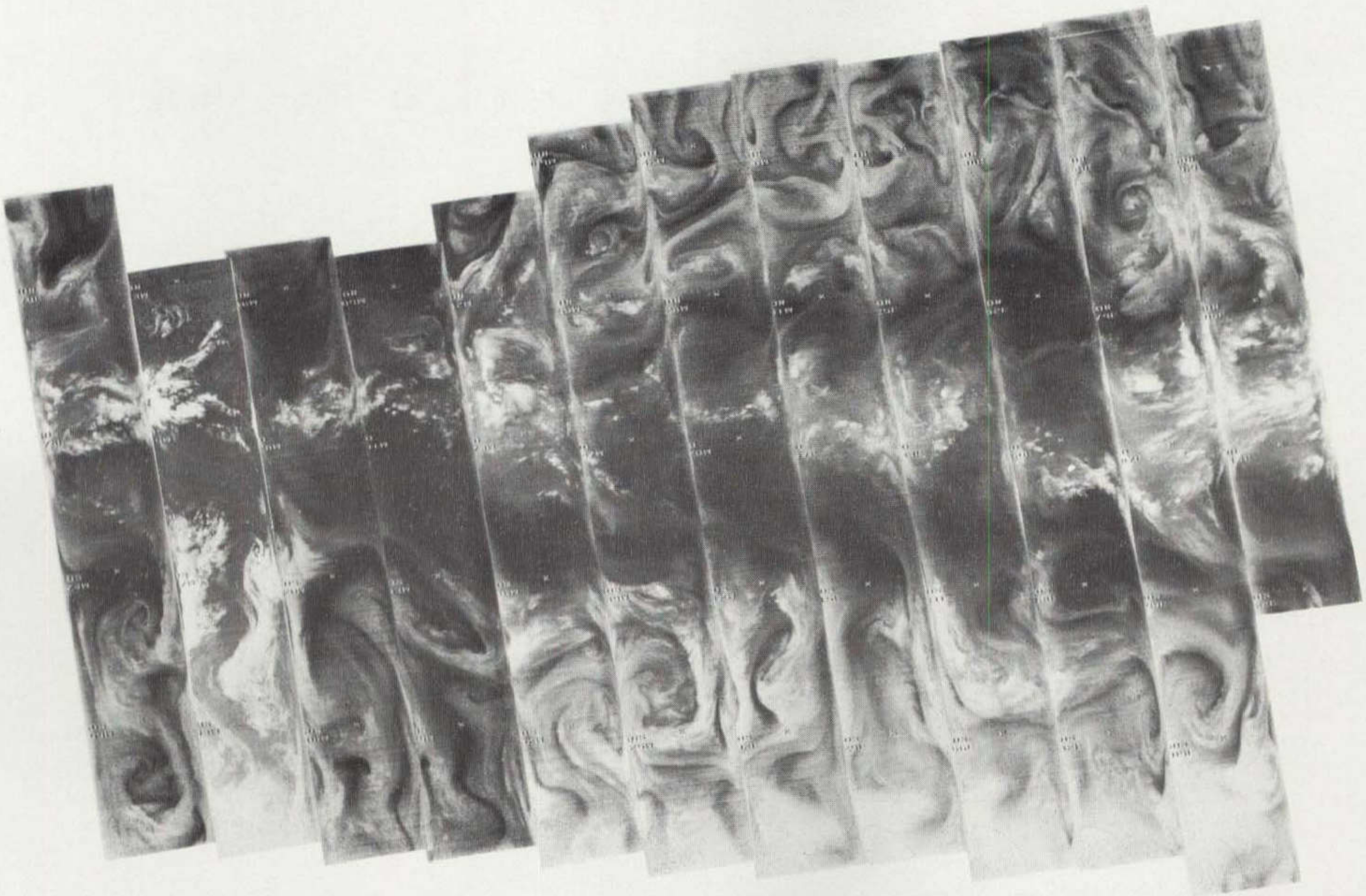
6.7μm



4994 4993 4992 4991 4990 4989 4988 4987 4986 4985 4984 4983 4982

18 JUN 1976

11.5μm



5008 5007 5006 5005 5004 5003 5002 5001 5000 4999 4998 4997 4996 4995

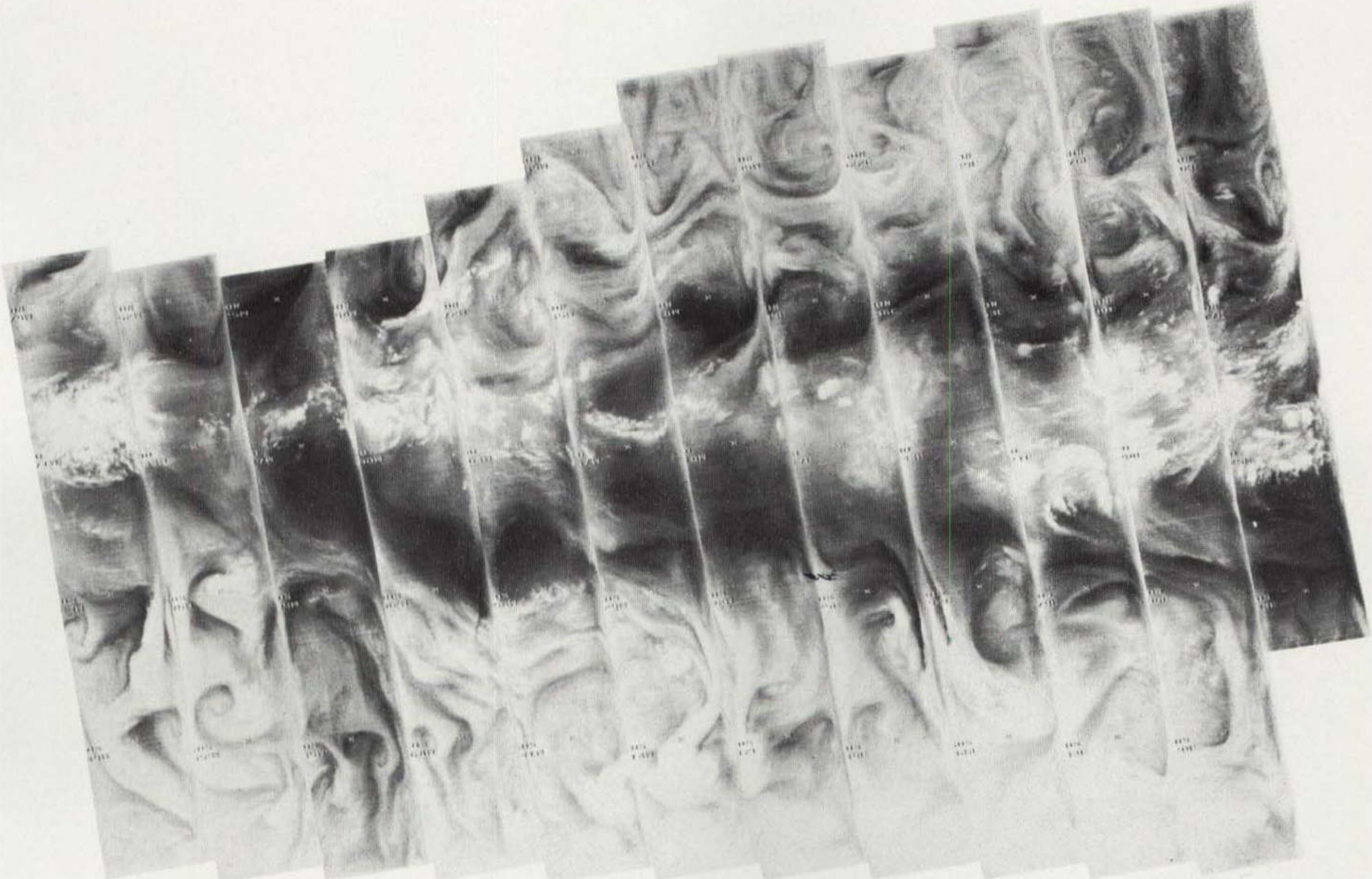
19 JUN 1976

6.7μm

5008 5007 5006 5005 5004 5003 5002 5001 5000 4999 4998 4997 4996 4995

19 JUN 1976

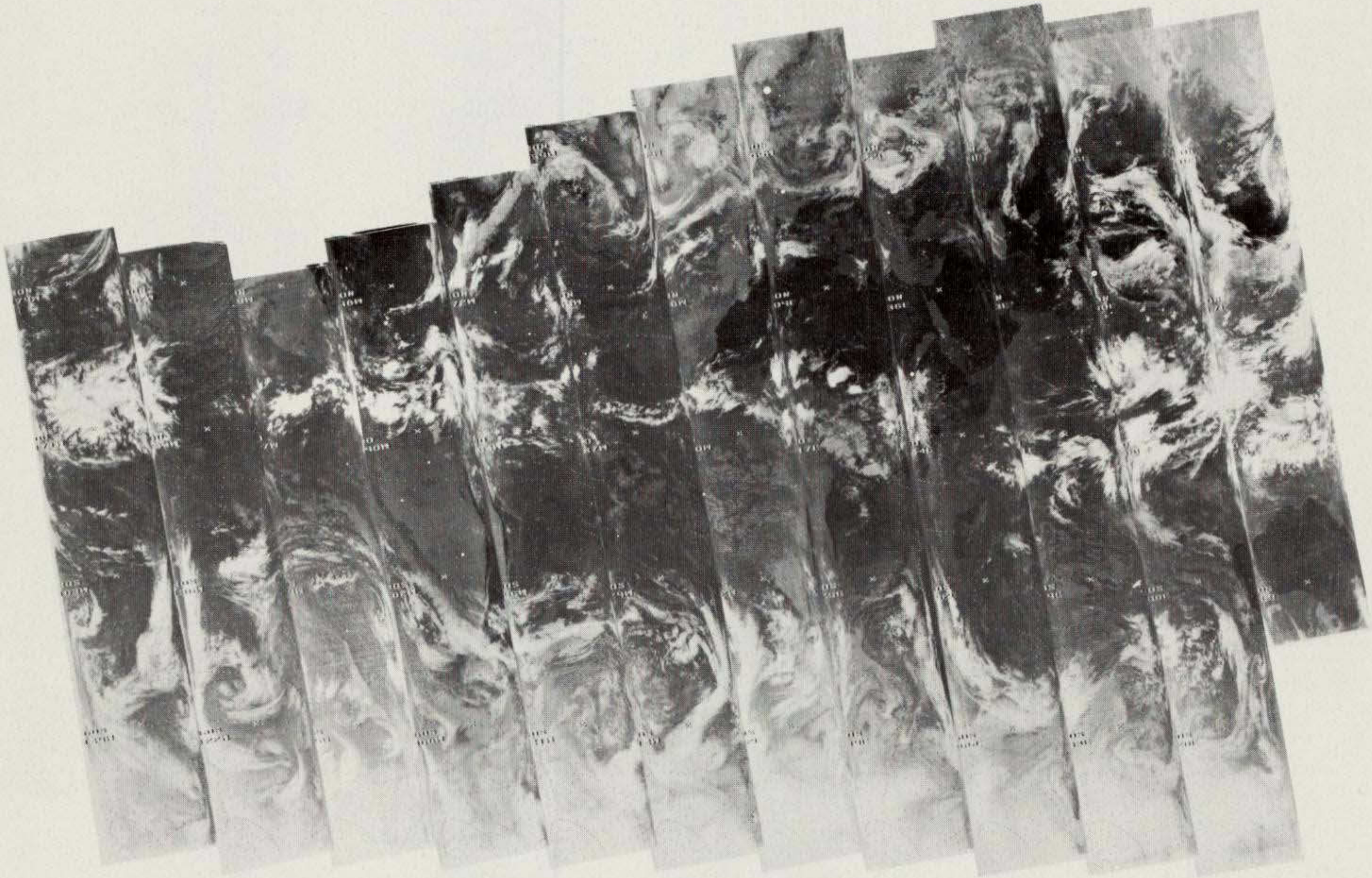
11.5μm



5021 5020 5019 5018 5017 5016 5015 5014 5013 5012 5011 5010 5009

20 JUN 1976

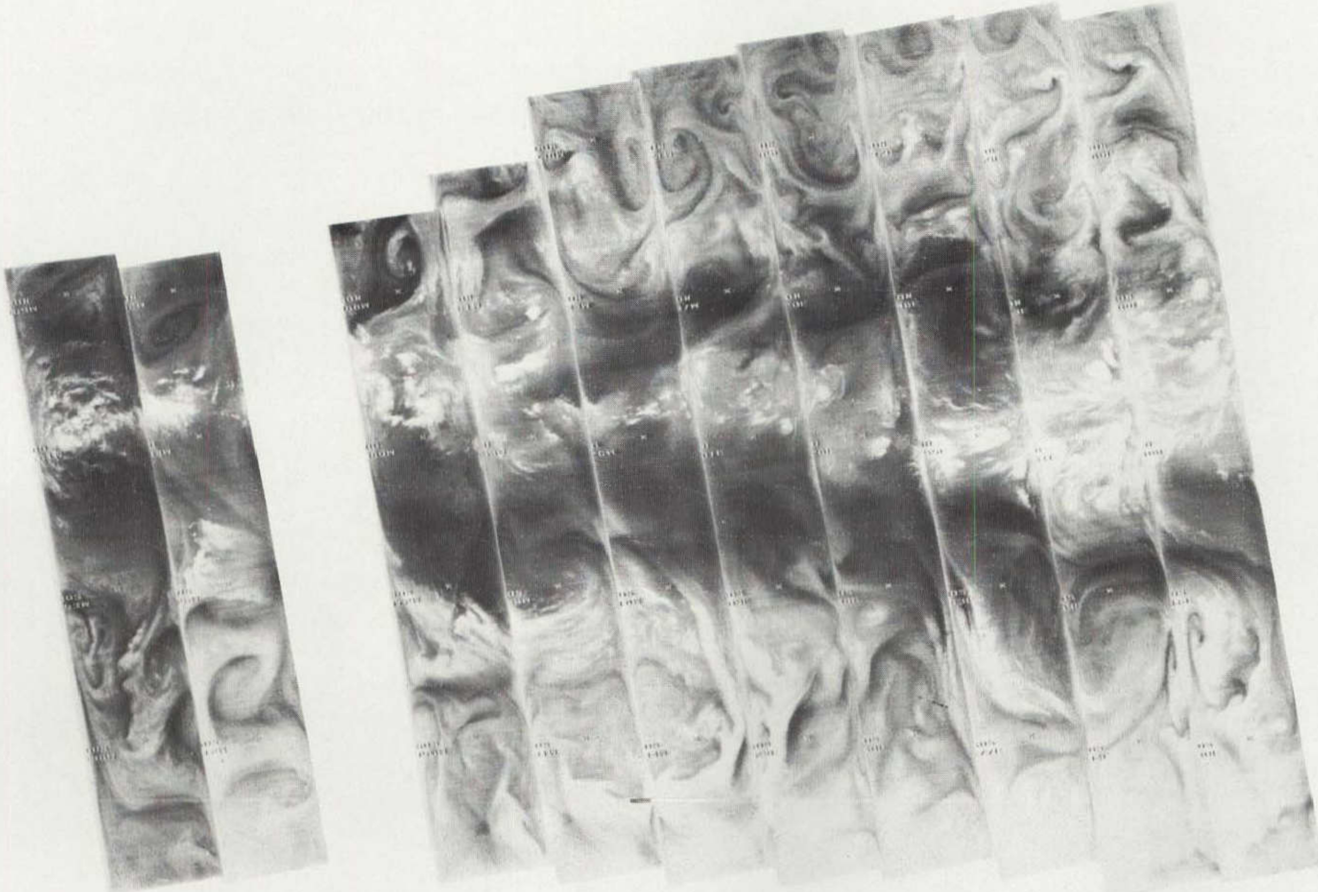
6.7μm



5021 5020 5019 5018 5017 5016 5015 5014 5013 5012 5011 5010 5009

20 JUN 1976

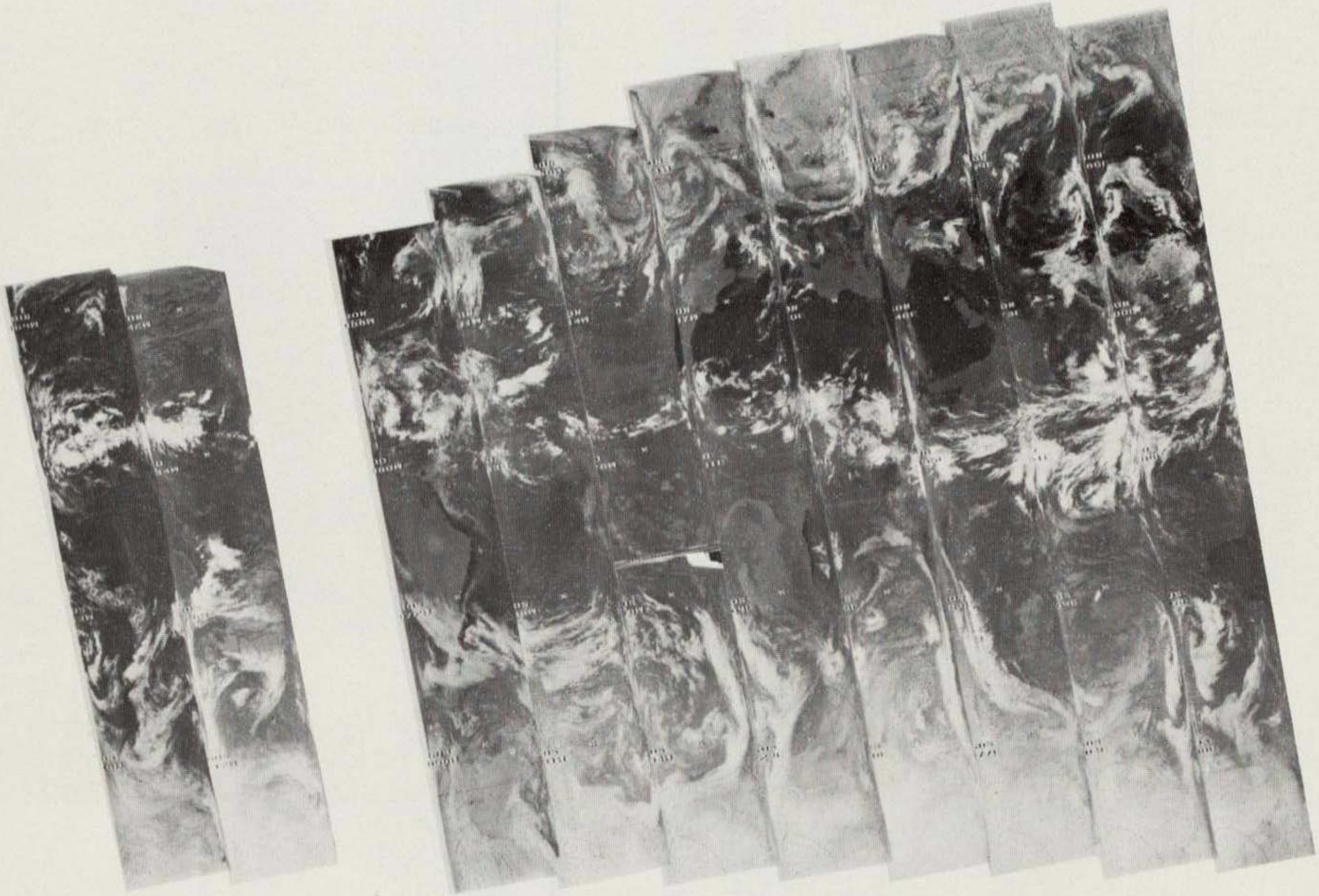
11.5μm



5034 5033 5032 5031 5030 5029 5028 5027 5026 5025 5024 5023 5022

21 JUN 1976

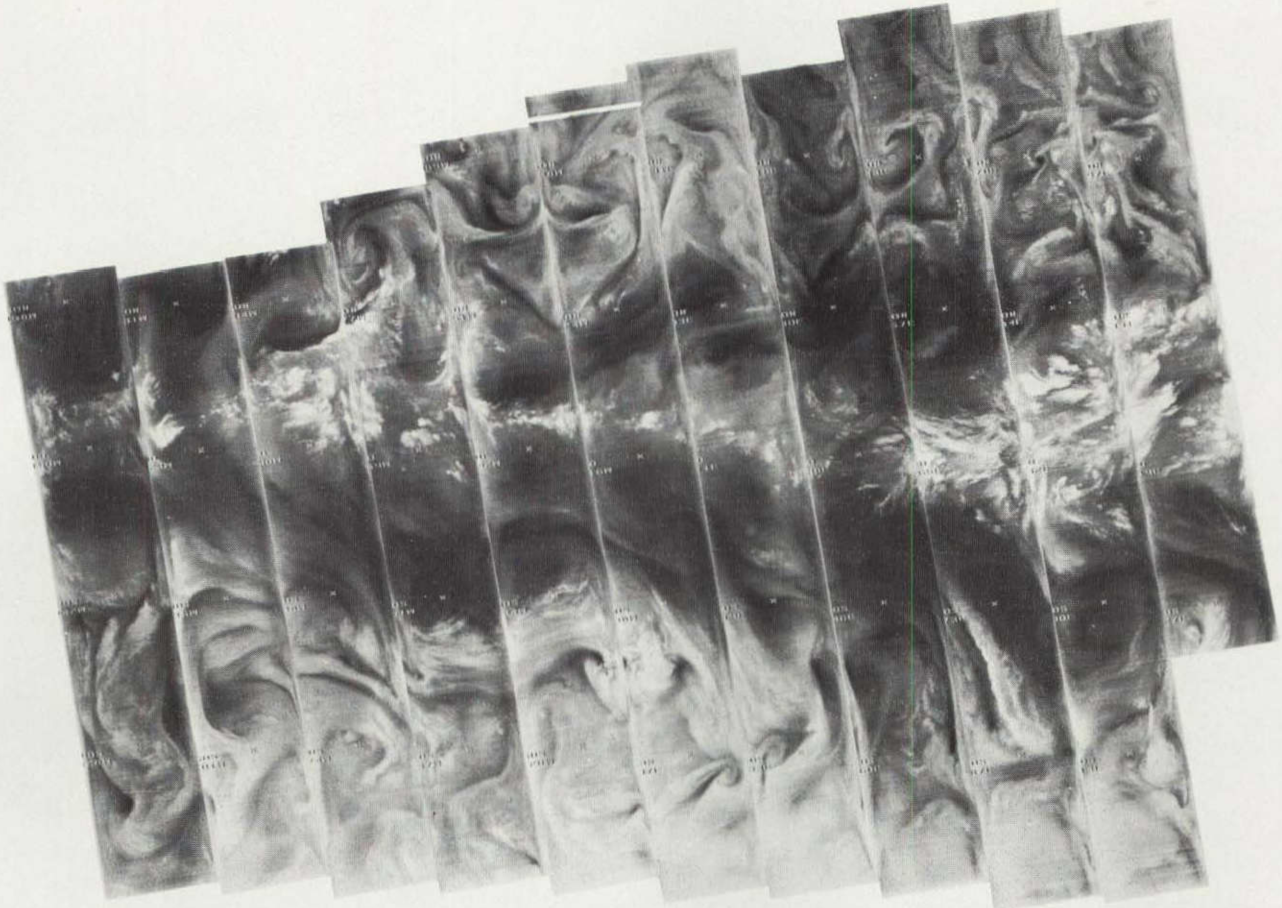
6.7μm



5034 5033 5032 5031 5030 5029 5028 5027 5026 5025 5024 5023 5022

21 JUN 1976

11.5μm



5048 5047 5046 5045 5044 5043 5042 5041 5040 5039 5038 5037 5036 5035

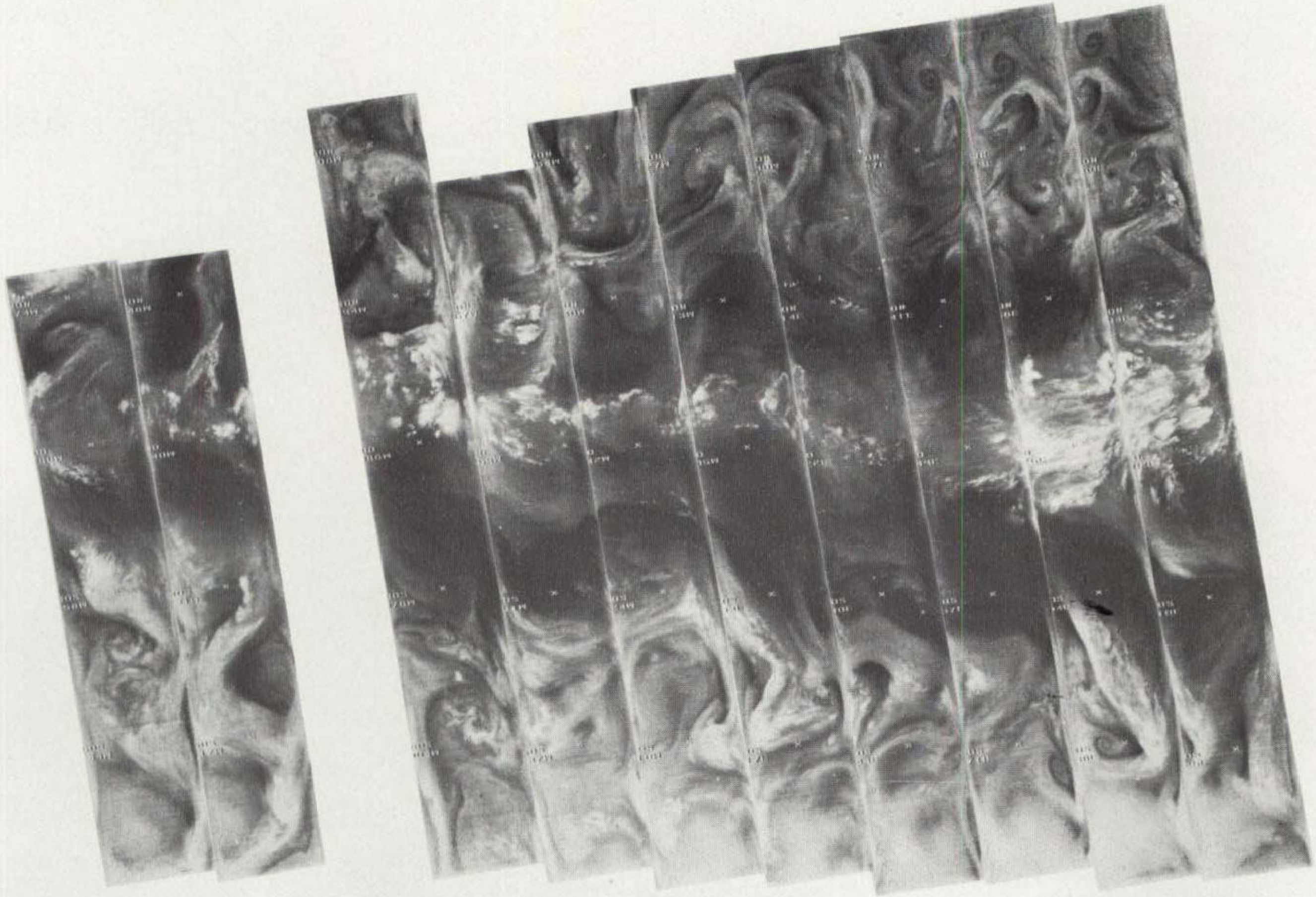
22 JUN 1976

6.7μm

5048 5047 5046 5045 5044 5043 5042 5041 5040 5039 5038 5037 5036 5035

22 JUN 1976

11.5μm



5061 5060 5059 5058 5057 5056 5055 5054 5053 5052 5051 5050 5049

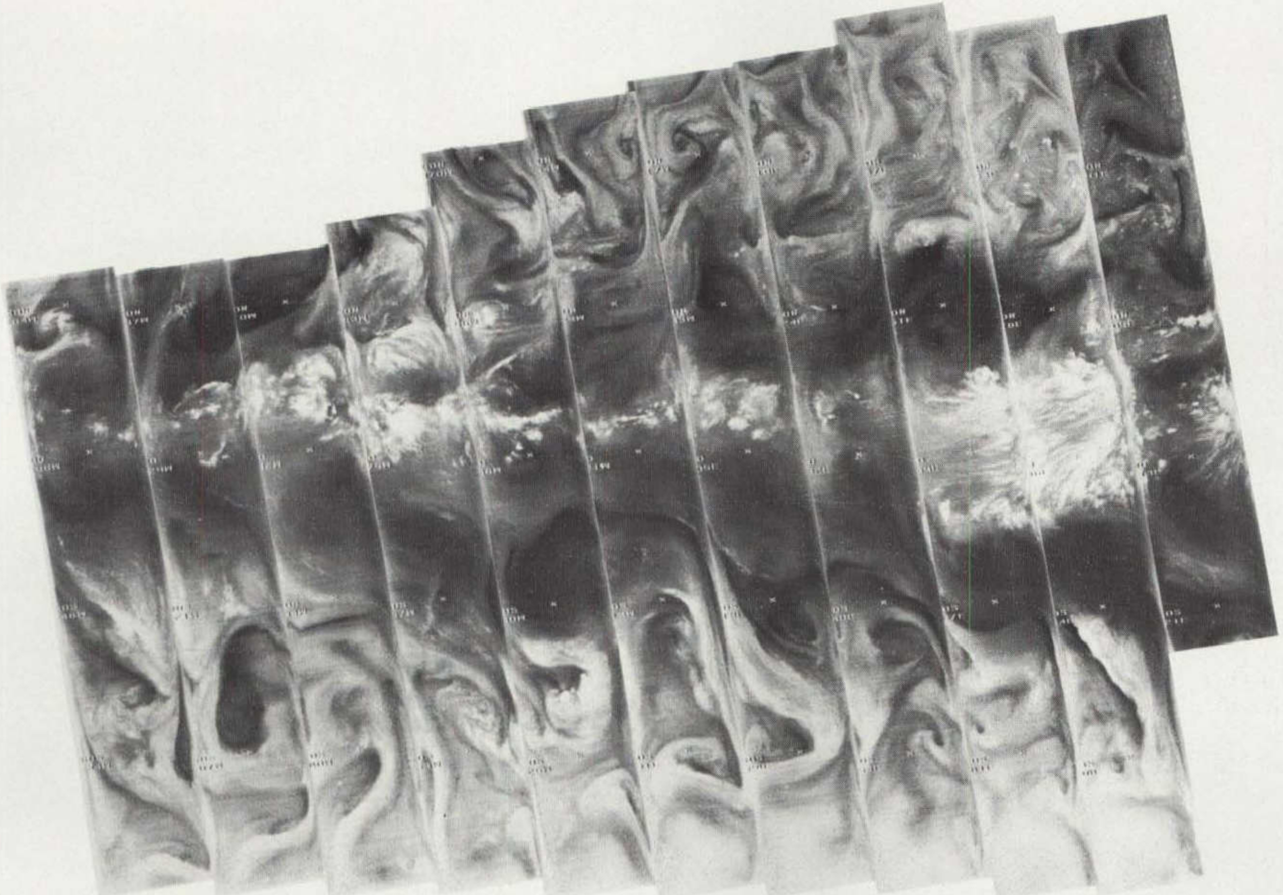
23 JUN 1976

6.7μm

5061 5060 5059 5058 5057 5056 5055 5054 5053 5052 5051 5050 5049

23 JUN 1976

11.5μm



5075 5074 5073 5072 5071 5070 5069 5068 5067 5066 5065 5064 5063 5062

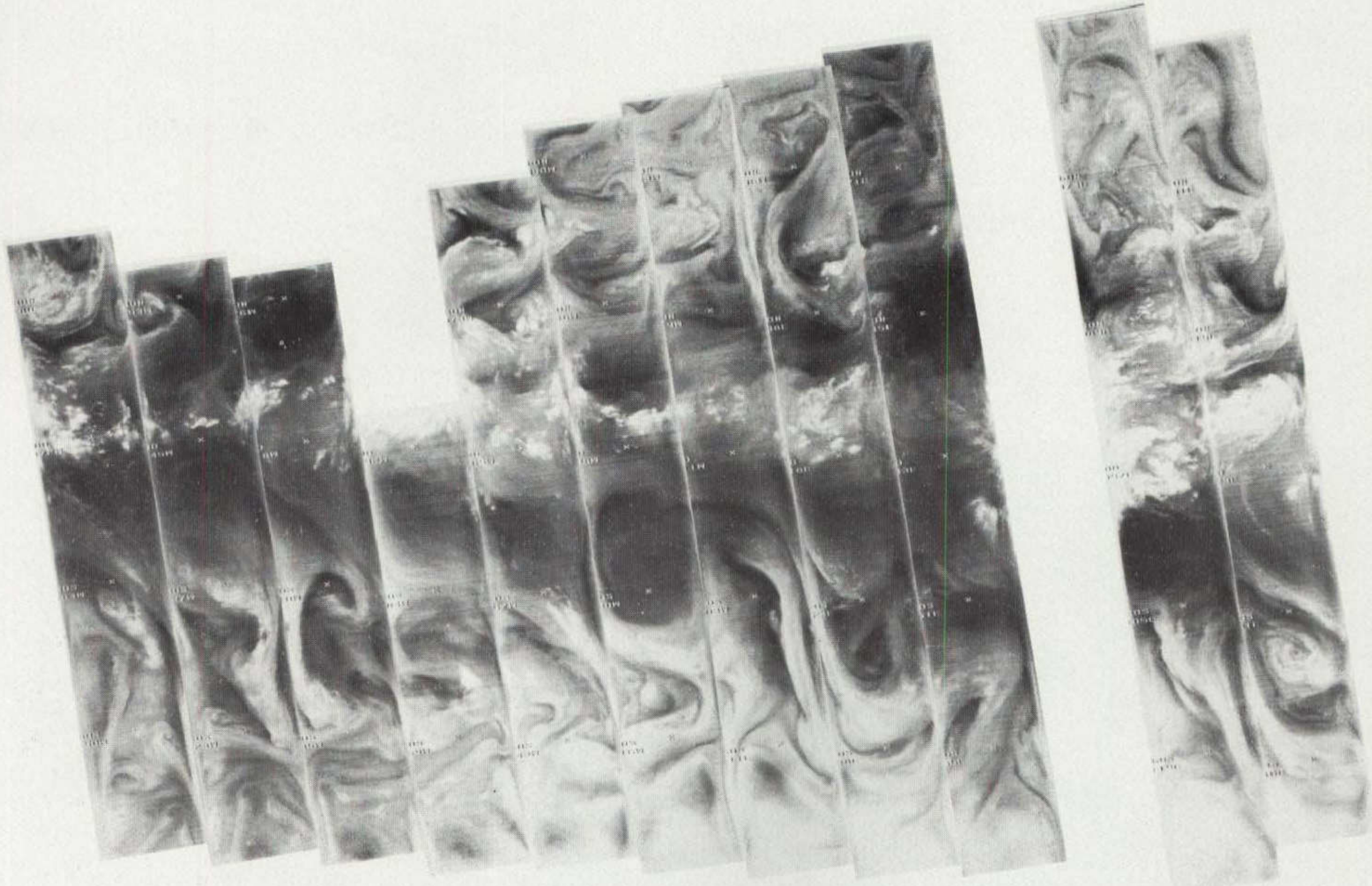
24 JUN 1976

6.7μm

5075 5074 5073 5072 5071 5070 5069 5068 5067 5066 5065 5064 5063 5062

24 JUN 1976

11.5μm



5088 5087 5086 5085 5084 5083 5082 5081 5080 5079 5078 5077 5076

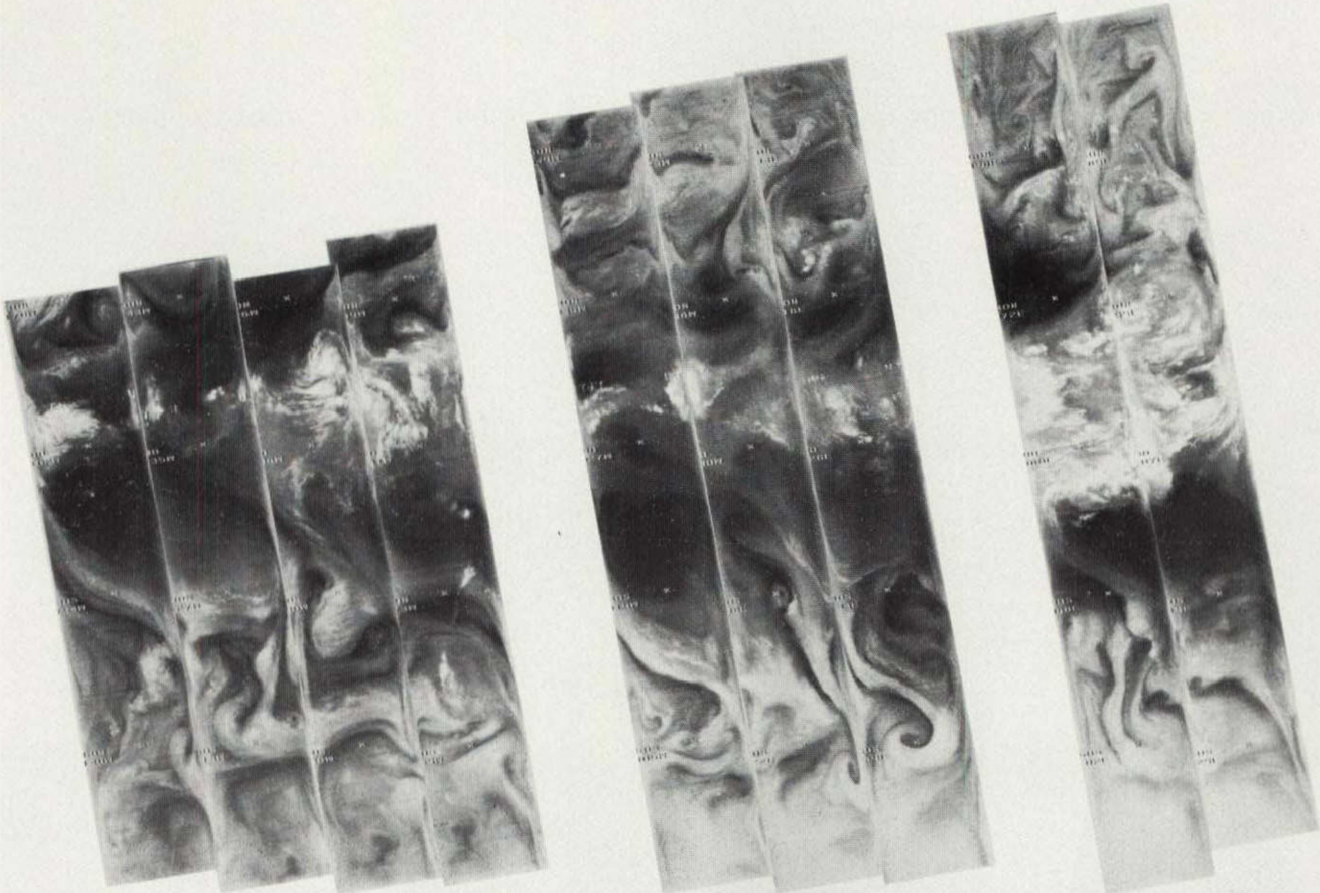
25 JUN 1976

6.7μm

5088 5087 5086 5085 5084 5083 5082 5081 5080 5079 5078 5077 5076

25 JUN 1976

11.5μm



5101 5100 5099 5098 5097 5096 5095 5094 5093 5092 5091 5090 5089

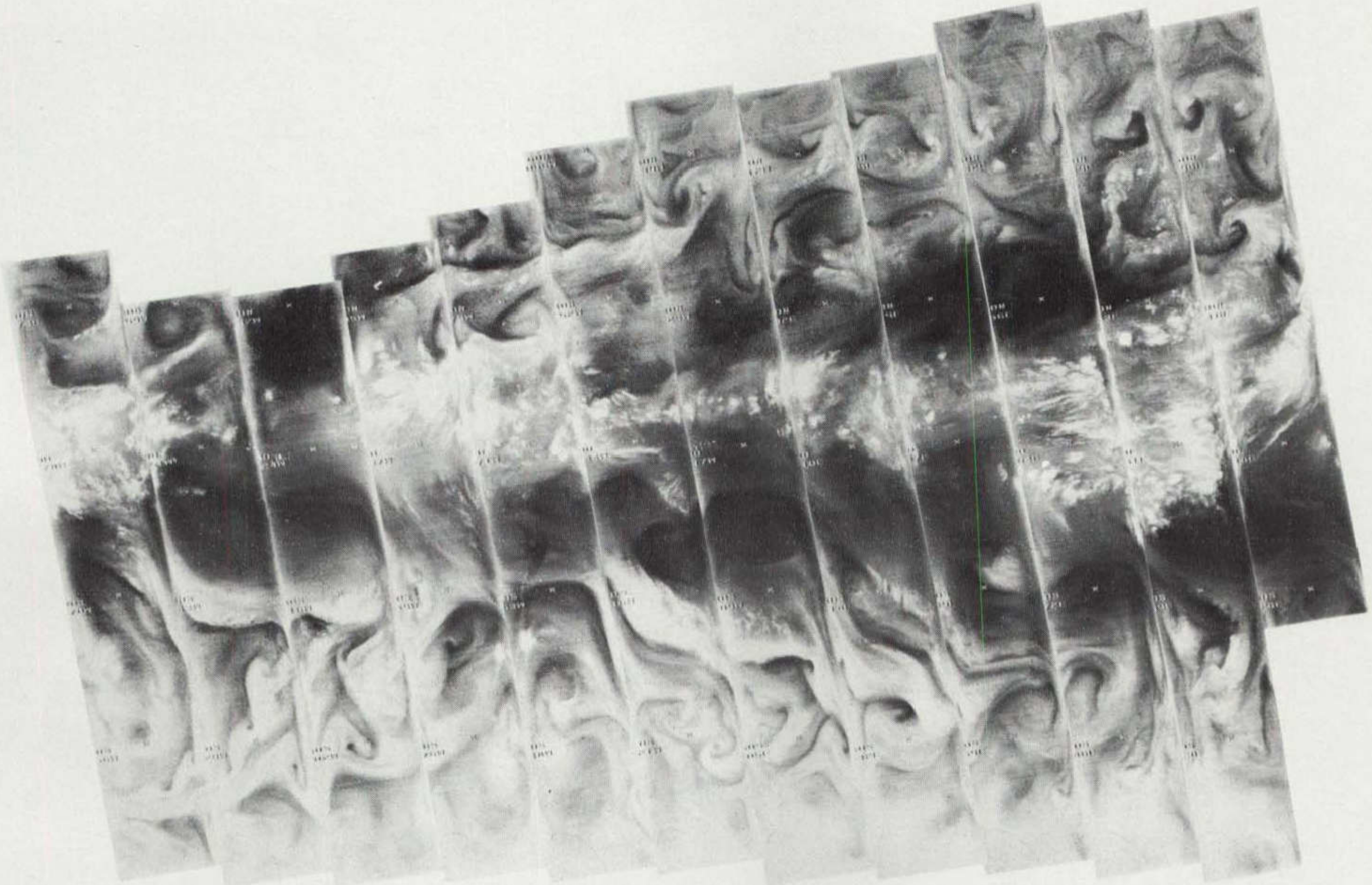
26 JUN 1976

6.7μm

5101 5100 5099 5098 5097 5096 5095 5094 5093 5092 5091 5090 5089

26 JUN 1976

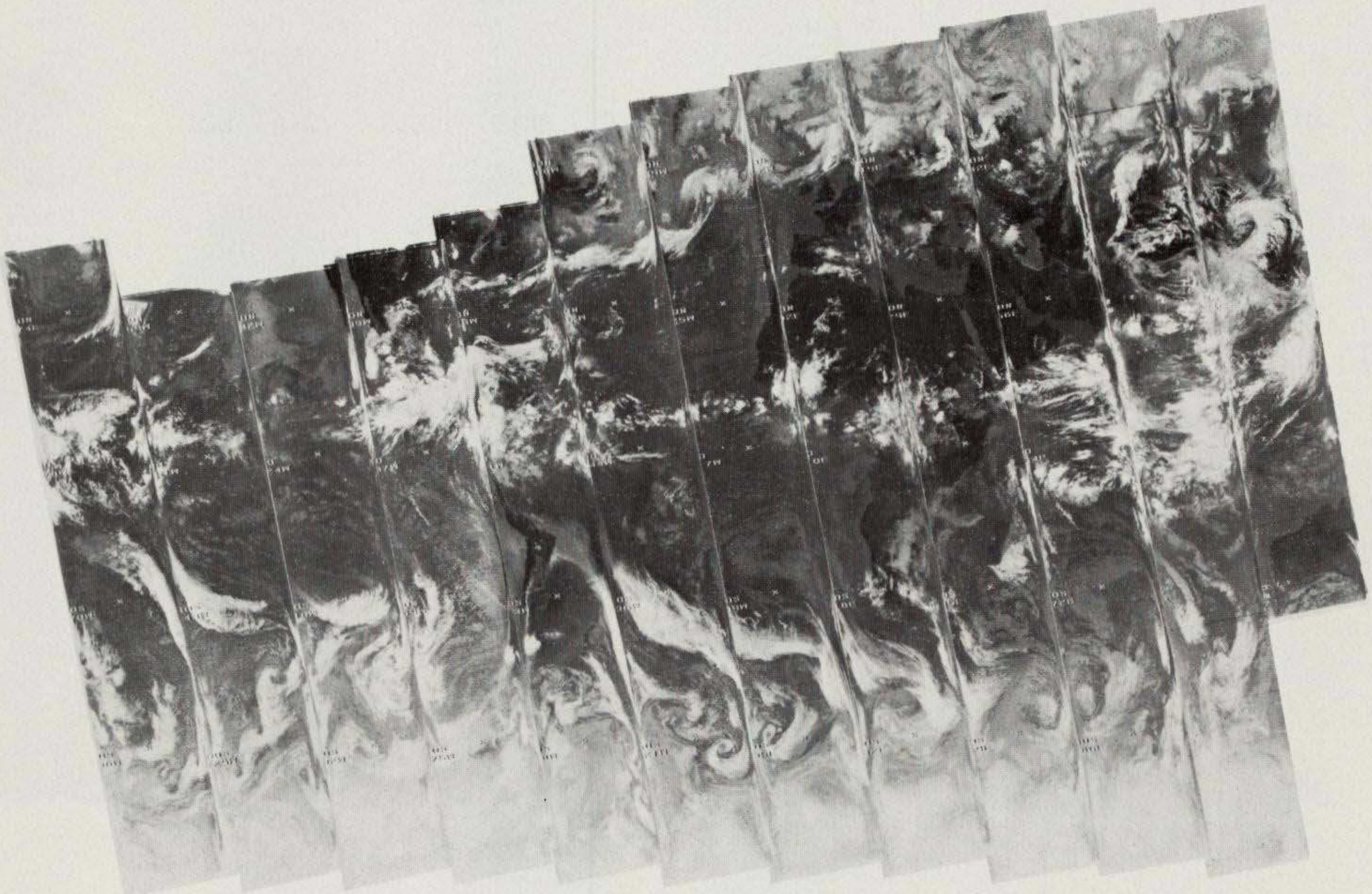
11.5μm



5115 5114 5113 5112 5111 5110 5109 5108 5107 5106 5105 5104 5103 5102

27 JUN 1976

6.7μm



5115 5114 5113 5112 5111 5110 5109 5108 5107 5106 5105 5104 5103 5102

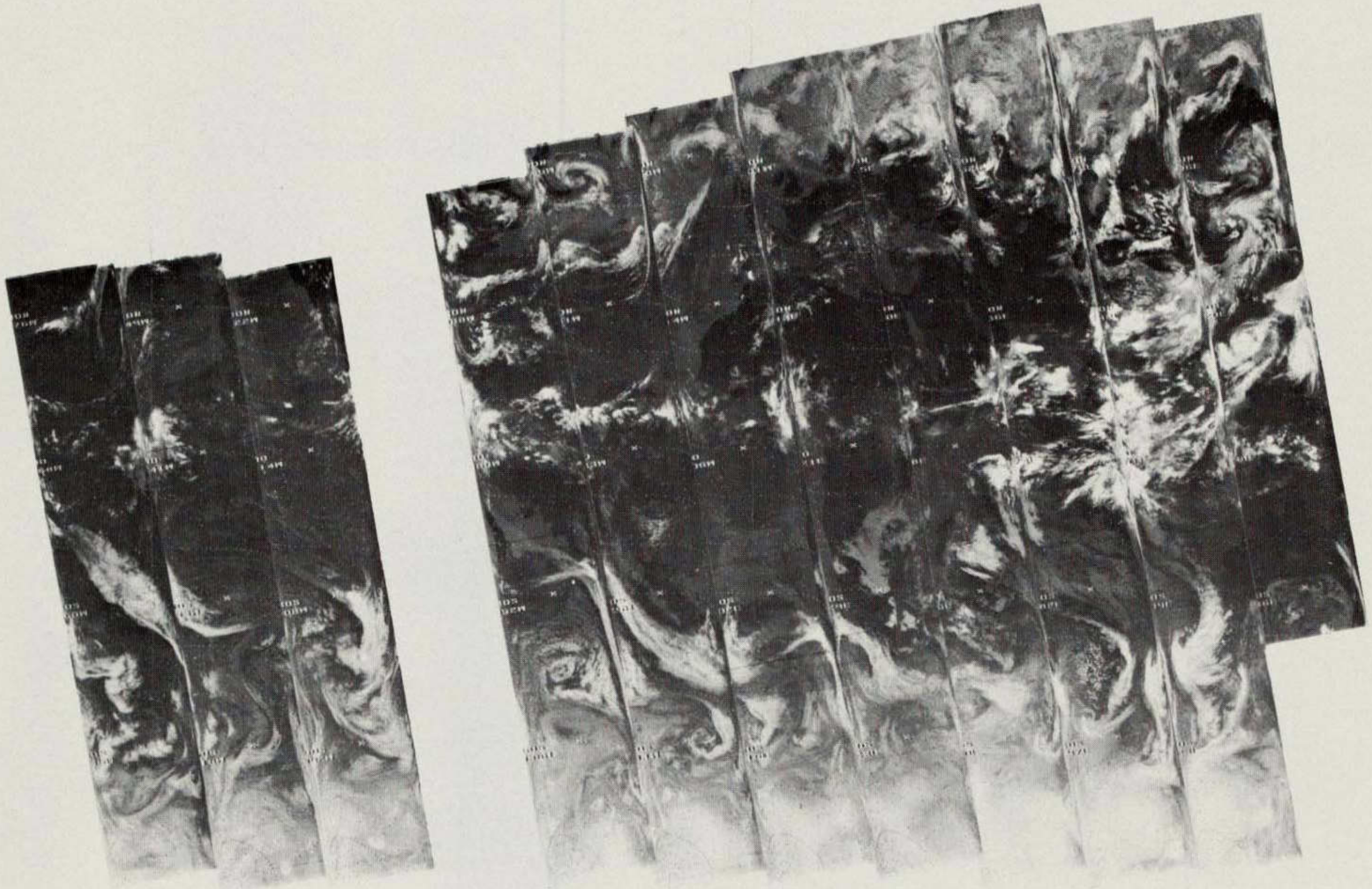
27 JUN 1976

11.5μm

5128 5127 5126 5125 5124 5123 5122 5121 5120 5119 5118 5117 5116

28 JUN 1976

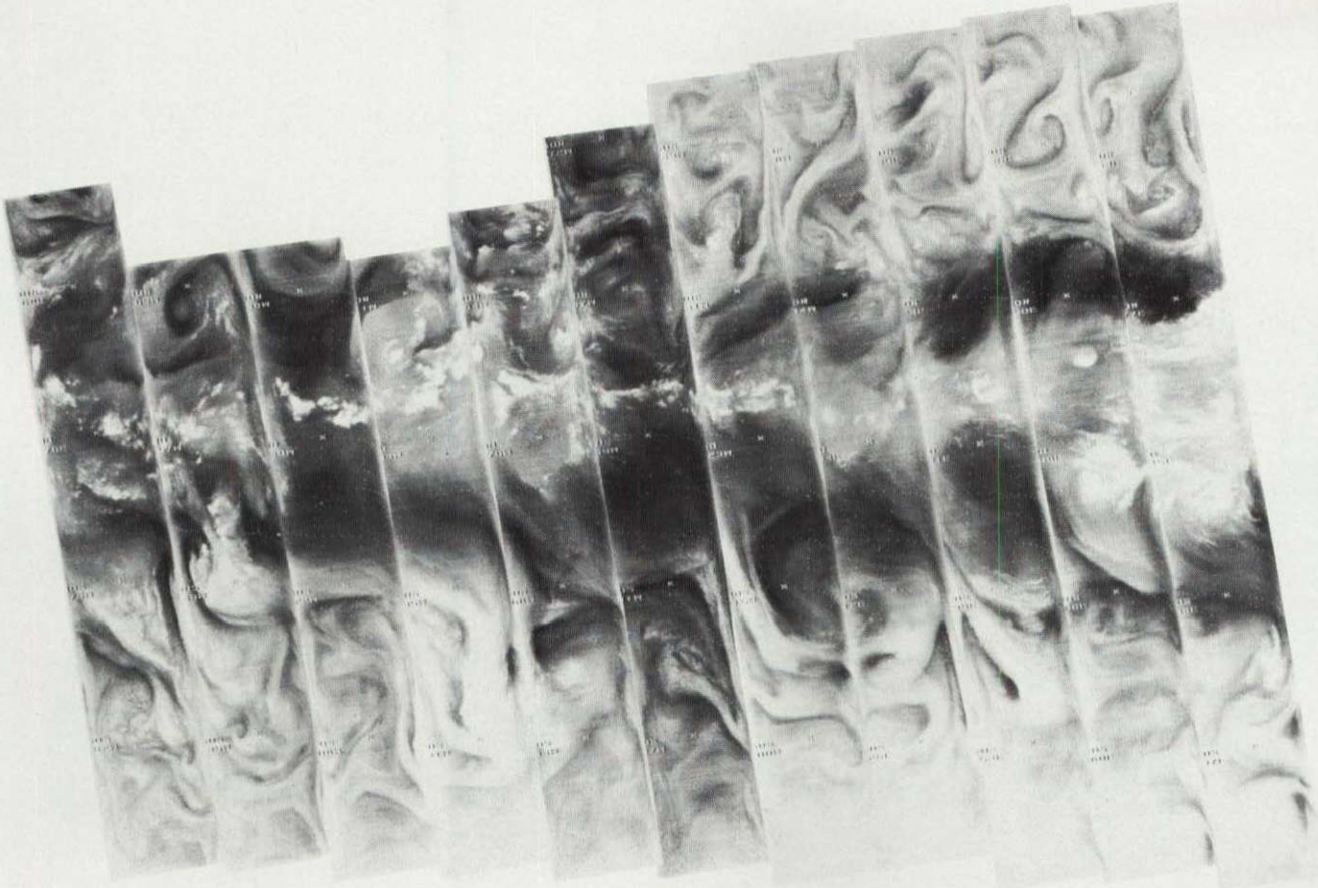
6.7μm



5128 5127 5126 5125 5124 5123 5122 5121 5120 5119 5118 5117 5116

28 JUN 1976

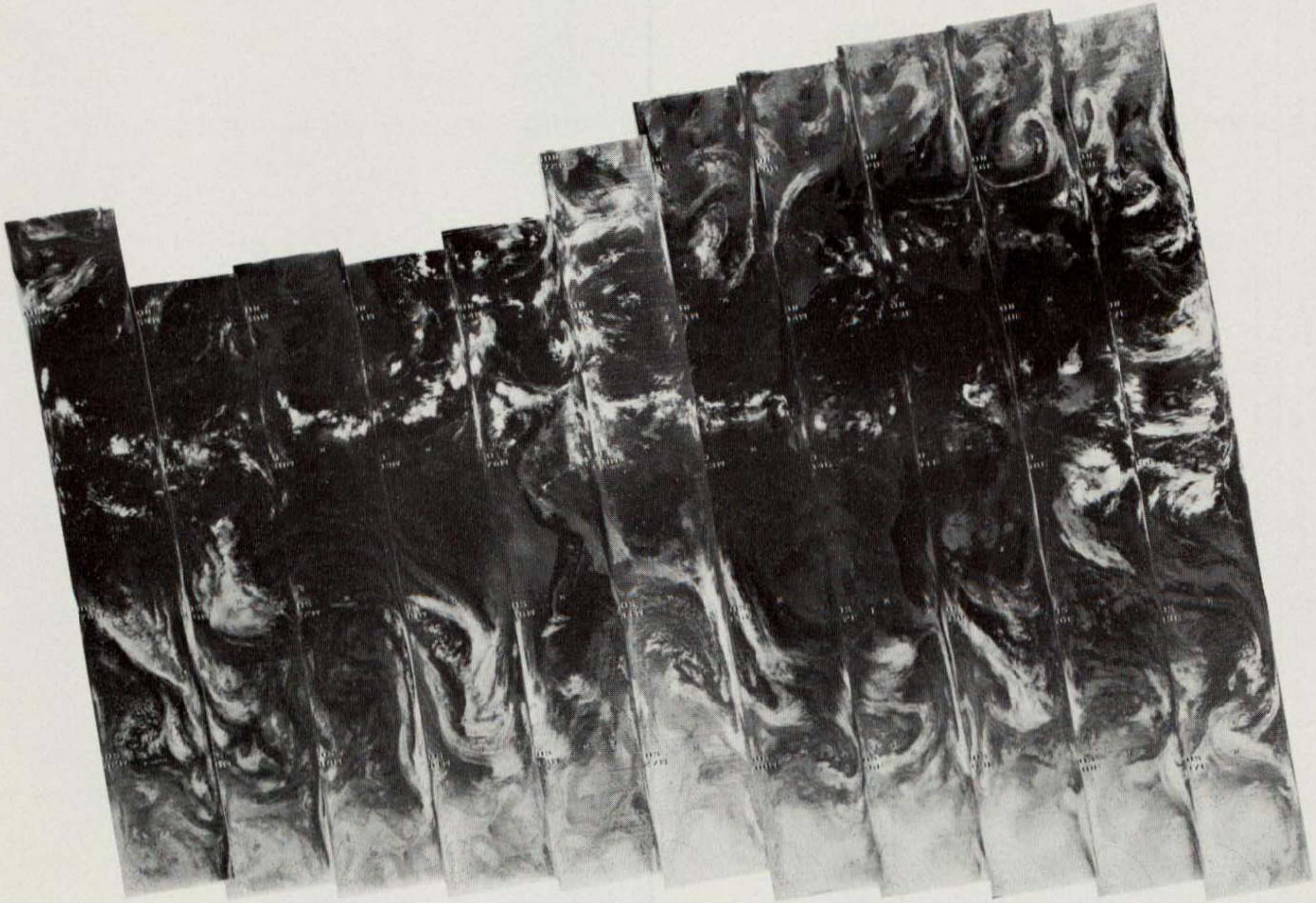
11.5μm



5142 5141 5140 5139 5138 5137 5136 5135 5134 5133 5132 5131 5130 5129

29 JUN 1976

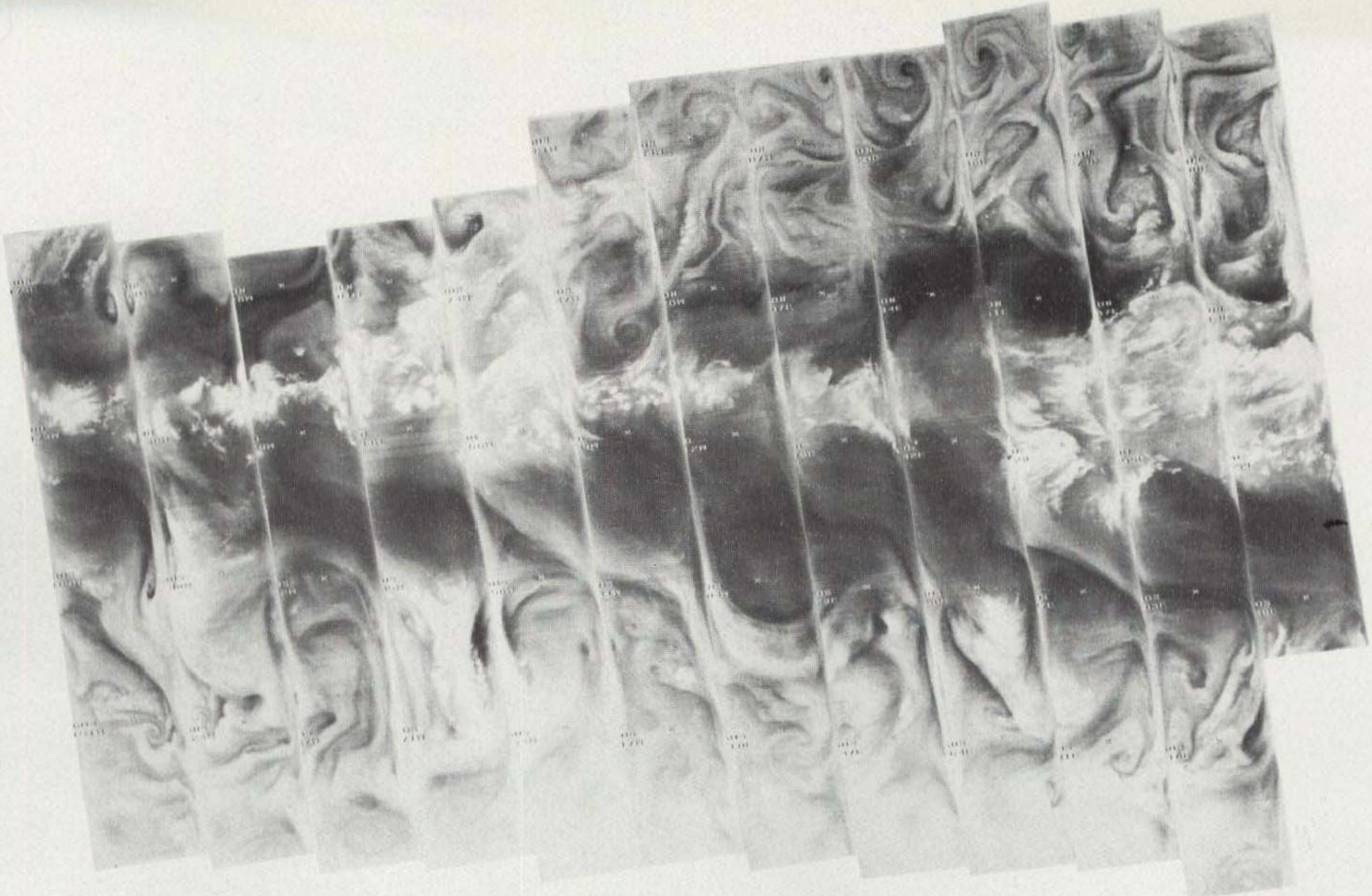
6.7μm



5142 5141 5140 5139 5138 5137 5136 5135 5134 5133 5132 5131 5130 5129

29 JUN 1976

11.5μm



5155 5154 5153 5152 5151 5150 5149 5148 5147 5146 5145 5144 5143

30 JUN 1976

6.7μm

5155 5154 5153 5152 5151 5150 5149 5148 5147 5146 5145 5144 5143

30 JUN 1976

11.5μm

SECTION 5

CORRECTIONS TO THE NIMBUS 6 USER'S GUIDE

This section presents all corrections or additions to The Nimbus 6 User's Guide, which now are known to be necessary. If additional corrections are required, they will appear in a subsequent catalog. All corrections will be carried forward cumulatively into each new catalog.

5.1 THIR Corrections to the User's Guide

The THIR mirror on Nimbus 6 rotates counter clockwise. Therefore, replace lines one through four on page 14 with the following:

> ". . .rotation is such that, when combined with the velocity vector of the satellite, a left-hand spiral results. Therefore, the mirror scans across the earth from west to east in the daytime when traveling northward, and from east to west at night when traveling southward."

The information in Figure 2-4 on page 17 is correct. However, the direction of scan is counter clockwise, and not clockwise as shown.

5.2 HIRS Corrections to the User's Guide

On page 40, Table 3-2, under "Detector Summary" change LnSe to LnSb.

The CHANNEL (and) RANGE information in the swath displays for HIRS has been changed since launch, making Table 3-5 on pages 54 and 55 in the User's Guide incorrect. The table below labeled Table 3-5 provides the correct information.

5.3 SCAMS Corrections to the User's Guide

The information contents of the image in the swath displays for SCAMS has been changed since launch, making Tables 4-5, 4-6, and 4-7 in the User's Guide incorrect. Thus, the table below labeled Table 4-5 and 6 replaces Tables 4-5 and 4-6 in the User's Guide, and the table labeled 4-7 replaces Table 4-7 in the User's Guide. All the images display the same parameters. Therefore, these new tables do not list all the possible displays, as were listed in the old Tables 4-5, 4-6, and 4-7.

On page 44, Figure 3-3, the SCAMS elements are shown with a right-to-left (clockwise) stepping pattern when looking in the direction of satellite motion. The SCAMS elements should be corrected to show a left-to-right (counterclockwise) stepping pattern.

Table 5-1

This table replaces Table 3-5 on pages 54 and 55 in The Nimbus 6 User's Guide

Table 3-5

Temperature Range of Gray Scale, and Channel of HIRS Data for each Swath on each HIRS Image Display Between Orbit 426 and 4697 (14 July 1975 through 27 May 1976)

		SWATH NUMBER									
		1	2	3	4	5	6	7	8	9	10
Coverage Period 14 July-20 July Orbits 426-513	HIRS Channel Display (channel-range)*	08-08	09-09	10-10	16-16	17-17	18-18	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black to white)	300-200	290-210	260-210	310-270	100-900	0-30	290-210	260-210	240-210	280-210
Coverage Period 22 July-31 July Orbits 538-545 548-549 600-613 615-647 651-657 659	HIRS Channel Display (channel-range)*	08-08	09-09	10-10	16-16	17-17	17-17	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	300-200	290-210	260-230	310-270	100-900	100-900	280-200	280-200	280-200	280-200
Coverage Period 23 July-6 Aug Orbits 546-547 553-599 614 648-650 658 660-747	HIRS Channel Display (channel-range)*	08-08	16-16	16-21	18-18	17-17	10-10	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	300-200	310-270	300-200	0-30	100-900	260-230	280-200	280-200	280-200	280-200

Table 3-5 (Continued)

		SWATH NUMBER									
		1	2	3	4	5	6	7	8	9	10
Coverage Period 7 Aug. - 27 May Orbits 748-4697	HIRS Channel Display (channel-range)†	08-08	16-16	16-21	18-18	17-17	10-10	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	310-230	310-230	310-270	0-50	100-900	280-210	300-210	300-210 **	240-185	300-185 ***

*The HIRS channel number is number before the hyphen. The number after the hyphen is the computer program table used to display the data from each channel as temperatures (°K). The range of temperatures displayed in each swath is given beneath each "HIRS Channel Display." The 18 steps of the scale are used to represent the division of each temperature range into 18 approximately equal temperature intervals. The central wavelength (in μm) of each channel on these displays is channel 3 = 14.4, 8 = 11.0, 9 = 8.2, 10 = 6.7, 12 = 4.52, 14 = 4.40, 15 = 4.24, 16 = 3.71, 17 = 0.61, and 18 is the temperature difference between channel 16 and channel 8. The values of channel 17-17 are albedo, represented as "counts" between 100 (blackest) and 900 (whitest). The values for 16-21 represent a second temperature range for channel 16 data. Table 3-1 on page 39 of the User's Guide provides detailed spectral information and the purpose of each of the HIRS channels.

**14-14 temperature range changed to 270-210 on orbit 3166A (26 January 1976)

***15-15 temperature range changed to 275-210 on orbit 3166A (26 January 1976)

Table 5-2

This table replaces Tables 4-5 and 4-6 (on pages 79 through 81) in the Nimbus 6 User's Guide and Table 5-2 in the Nimbus 6 Data Catalog Volume 4

Table 4-5 and 6

Parameter Limits of the Gray Scale for Parameters 1, 2, 3, 5, 11, 12, and 16 on the SCAMS Image Displays between Orbits 426 and 4751 (14 July 1975 and 31 May 1976)

	Swath		1	2	3	4	5
Orbits 426 thru 1425 14 July 75 thru 26 Sept. 75	Parameter		3	2	16	11	12
	Gray Scale Value	black	280	320	10	60	1.5
			°K	°K	°K	g/mm^2	g/mm^2
		white	210	100	-22	0.0	-0.1*
Orbits 1426 thru 3675 26 Sept. 75 thru 12 Mar. 76	Parameter		3	2	16	11	12
	Gray Scale Value	black	280	320	10	60	2.0
			°K	°K	°K	g/mm^2	g/mm^2
		white	210	100	-22	0.0	0.0
Orbits 3676 thru 3899 12 Mar. 76 thru 29 Mar. 76	Parameter		5	2	16	11	12
	Gray Scale Value	black	240	320	10	70	2.0
			°K	°K	°K	g/mm^2	g/mm^2
		white	200	100	-22	0.0	0.0
Orbits 3900 thru 3929 29 Mar. 76 thru 31 Mar. 76	Parameter		1	1	1	5	5
	Gray Scale Value	black	220	265	300	240	280
			°K	°K	°K	°K	°K
		white	130	210	260	200	220
Orbits 3930 thru 4584 31 Mar. 76 thru 19 May 76	Parameter		1	1	1	2	3
	Gray Scale Value	black	220	265	300	320	280
			°K	°K	°K	°K	°K
		white	130	210	260	100	220
Orbits 4585 thru 4751 19 May 76 thru 31 May 76	Parameter		1	1	1	5	3
	Gray Scale Value	black	220	260	290	240	280
			°K	°K	°K	°K	°K
		white	130	200	-245	180	220

*1.6 to 0 0 between orbit 426 and 477

Parameters 1, 2, 3, 5, and 16 represent uninverted antenna temperatures for channels 1 (22.24 GHz), 2 (31.65 GHz), 3 (52.85 GHz), and 5 (55.45 GHz). Parameter 16 is the temperature difference between channels 2 and 3. Parameters 11 and 12 represent inverted antenna temperatures of integrated atmospheric water vapor (channel 11) and integrated liquid water from clouds or precipitation.

Table 5-3

This table replaces Table 4-7 (on pages 82 and 83) in The Nimbus 6 User's Guide

Table 4-7

Contour Program Options used for Parameters 13, 14, and 15 on the SCAMS Image Display

Contour options	Parameters: 13 Mean temperature between 1000 mb and 500 mb	14 Mean temperature between 500 mb and 250 mb	15 Mean temperature between 250 mb and 100 mb	Valid for orbits
Contour interval	4°K	4°K	4°K	426-851 (14 July-14 Aug 1975)
Contour thickness	1°K	1°K	1°K	
Contour interval	4°K	4°K	4°K	852-4751 (14 Aug.-1975-31 May 1976)
Contour thickness	2°K	2°K	2°K	

Section 4.5.3 "Tape Format" on page 83 of the User's Guide states that each tape will have "five files, i.e., a short header file. . . and four data files, . . ." There will not be a header file on the archival tape. The sentence should be changed to read: "The tapes will be standard 9-track 1600 BPI tapes, each containing four data files, one for each of four days."

In Table 4-8 on page 80 the "Pitch error" and "Roll error" "Dimensional Units" should be changed to counts (from Deg) and the "Multiplier Used" should be changed to 1 (from 32). In the same table the "Playback orbit" should be followed by one "I*2 Spare", and then by the "Reference orbit", which should be changed to I*4 (rather than I*2). (Reference orbit = year * 100,00 + day * 100 + finish hour.) The "Dimensional Units" for the "Geopotential thicknesses" on page 85 of the same table should be changed to "°K" (from DM).

The following information, describing how the antenna temperatures are computed from the SCAMS instrument digital data, should be added after SCAMS Section 4.5 of the User's Guide.

4.6 Post-launch Calibration

Antenna temperatures are computed from the SCAMS Instrument digital data for each of the five channels by the equation:

$$T_A = T_{AS} + \frac{T_{AC} - T_{AS}}{d_{Tc} - d_s}(d - d_s)$$

where T_A is antenna temperature for the earth (positions 0-12), T_{AS} is the space antenna temperature (position 13), T_{AC} is the calibration target antenna temperature (position 14), d is earth data in counts, d_s is space data in counts, and d_c is calibration target data in counts. The digital data matrix is described in Table 4-2 of the Nimbus 6 User's Guide. The space calibration antenna temperature is assumed constant at 3°K for all five channels. The target antenna temperature is computed by

$$T_{AC} = T_C + T_{CO}$$

The constant offset T_{CO} is currently zero for channels 1 and 2. The target temperatures (T_C) are given by

$$T_C = a_0 + a_1 (R - R_{25}) + a_2 (R - R_{25})^2$$

where the thermistor resistances (R) are computed by

$$R = R_1 + \frac{R_2 - R_1}{d_{R2} - d_{R1}} (d_R - d_{R1})$$

and values of the other constants are listed in Table 4-9a. Note that channels 3, 4, and 5 share the same calibration target. Also listed in Table 4-9a are word numbers in the digital data matrix containing data values d_R, d_{R1}, d_{R2}, and the recent addition of the T_{CO} value for channels 3, 4, and 5.

Table 5-4

This table accompanies Section 4.6 "Post-launch Calibration", and should be added to the end of the SCAMS section of the User's Guide

Table 4-9

Thermistor Calibration Constants used to Calculate the SCAMS Target Temperatures

constant \ channel	1	2	3,4,5
a_0	298.16		
a_1	.46485	.46535	.46814
a_2	$3.0 \cdot 10^{-5}$	$2.9 \cdot 10^{-5}$	$3.0 \cdot 10^{-5}$
R_{25}	603.75	602.98	599.71
R_1	495.6		
R_2	603.4		
d_R (word no.)	1	11	2
d_{R1}(word no.)	61		62
d_{R2}(word no.)	71		72

Table 5-5

This table replaces Table 4-9 in Section 4.6 "Post-launch Calibration" and should be added to the end of the SCAMS section of the User's Guide.

Table 4-9a·

Thermistor Calibration Constants used to Calculate the SCAMS Target Temperatures

constant \ channel	1	2	3,4,5
a_0	298.16		
a_1	.46485	.46535	.46814
a_2	$3.0 \cdot 10^{-5}$	$2.9 \cdot 10^{-5}$	$3.0 \cdot 10^{-5}$
R_{25}	603.75	602.98	599.71
R_1	495.6		
R_2	603.4		
d_R (word no.)	1	11	2
d_{R1} (word no.)	61		62
d_{R2} (word no.)	71		72
T_{CO}	0		-1.2°K

5.4 ESMR Corrections to the User's Guide

The following are corrected equations for the ESMR Section of the User's Guide:

page 90

$$X\ (\text{km}) = (636 + 10.8P = 0.32P^2)\ R_J$$

page 96

$$T_B = T_A - (T_A - T_C)\ \frac{(C - C_A)}{(C_C - C_A)}$$

page 101

$$T_{\substack{\text{Horizontal}\\ \text{True}}} = 1 + a\ T_{\substack{\text{Horizontal}\\ \text{Nominal}}} - T_{\substack{\text{Vertical}\\ \text{Nominal}}}$$

$$T_{\substack{\text{Vertical}\\ \text{True}}} = 1 + b\ T_{\substack{\text{Vertical}\\ \text{Nominal}}} - b\ T_{\substack{\text{Horizontal}\\ \text{Nominal}}}$$

page 106

$$N_i = 256\ (T_{H_i} - 100) + T_{V_i} - 100$$

The following information supplements Section 5.3.2 in the User's Guide.

The display format and temperature ranges of the images in the swath displays for ESMR has been changed since launch. The latest revision occurred after orbit 3932 in which each ESMR scan line is displayed once prior to orbit 3932 and twice after orbit 3933. Similarly, each of the 71 scan-spot elements is displayed once through orbit 3932 and twice after orbit 3933.

Through orbit 3932 (31 March) the ESMR displays contained 20 swaths of data, as shown in the ESMR image displays up to orbit 3932 in Section 3.3. The swaths are numbered (numbers not shown) from 1 on the left to 20 on the right. Each of the ten swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 5-5a. The right set of ten swaths has a similar format, and displays the earliest recorded data. If the right swaths were cut and placed above the group on the left, the new display would show the continuous coverage recorded for that orbit. Swaths 1 and 11 have the same polarization and temperature range. Similarly, swaths 2 and 12, 3 and 13, etc., are the same. The tables here labeled 5-6 and 5-7 replace Table 5-5 on page 105 of the User's Guide.

As stated above, the ESMR display format was modified at orbit 3933 (31 March 1976). After this orbit all displays will have the following new format.

The new displays contain ten swaths of data plus a geographic grid overlay for each swath, as shown in the ESMR image displays after orbit 3933 in Section 3.3, of the Nimbus 6, Data Catalog, Volume 5.

The swaths are numbered (numbers not displayed) from 1 on the left to 10 on the right. Each of the five swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 5-5b. The right set of five swaths has a similar format, and displays the latest recorded data. If the right swaths were cut and placed below the group on the left, the new display would show the continuous coverage of that display.

Swaths 1 and 6 display the same parameter. That is, the temperature range and polarization for swaths 1 and 6 are the same. Similarly, swaths 2 and 7, 3 and 8, 4 and 9, and 5 and 10 display the same parameters. Table 5-5b is set up to show this duplication of parameter information.

Data time (GMT) references for the left set of five swaths are shown adjacent to the vertical line at the left. Time tick marks are every five minutes with hour and minute annotation every fifteen minutes. Data time references for the right set of five swaths are shown in a similar manner adjacent to the vertical line at the right.

The center portion of the display contains two swaths of grid overlay information: the left grid for overlay on each of the five swaths on the left, and the right grid for overlay on each of the five swaths on the right. The grid longitudes are generated at ten degree intervals between 55 degrees south and 55 degrees north, and at 20 degree intervals from 55 degrees to the Poles. Latitude grids are generated every five degrees. All grid lines consist of a series of dots at one degree intervals. Latitudes are labeled at 60°S, 30°S, EQ, 30°N, and 60°N. Longitude labels are normally placed next to each latitude label.

Table 5-6

This table replaces Table 5-5 on page 105 in the User's Guide

Table 5-5

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 426 through 827 (14 July through 12 August 1975)

Gray Scale Number	Swath Number and ESMR Display Parameter									
	1 and 11 (T_H)	2 and 12 (T_V)	3 and 13 $\frac{T_H+T_V}{2}$	4 and 14 (T_H)	5 and 15 (T_V)	6 and 16 $\frac{T_H+T_V}{2}$	7 and 17 (T_H)	8 and 18 (T_V)	9 and 19 $\frac{T_H+T_V}{2}$	10 and 20 (T_V-T_H)
(black) 1	> 200			> 250			> 300			> 50
2	196-200	same	same	246-250	same	same	296-300	same	same	46-50
3	193-196	as	as	243-246	as	as	293-296	as	as	43-46
4	190-193	1 and 11	1 and 11	240-243	4 and 14	4 and 14	290-293	7 and 17	7 and 17	40-43
5	187-190			237-240			287-290			37-40
6	184-187			234-237			284-287			34-37
7	181-184			231-234			281-284			31-34
8	178-181			228-231			278-281			28-31
9	175-178			225-228			275-278			25-28
10	171-175			221-225			271-275			21-25
11	168-171			218-221			268-271			18-21
12	165-168			215-218			265-268			15-18
13	162-165			212-215			262-265			12-15
14	159-162			209-212			259-262			09-12
15	156-159			206-209			256-259			06-09
16	153-156			203-206			253-256			03-06
17	150-153			200-203			250-253			00-03
(white) 18	< 150			< 200			< 250			< 00

T_H = Brightness temperature derived from the ESMR horizontal polarization channel data

T_V = Brightness temperature derived from the ESMR vertical polarization channel data

Table 5-7
This table follows the new Table 5-6 (above), which replaced
Table 5-5 on page 105 in the User's Guide

Table 5-5a

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays
for Orbits 828 through 3932 (13 August 1975 through 31 March 1976)
(Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter									
	1 and 11 (T_H)	2 and 12 (T_V)	3 and 13 $\frac{T_H+T_V}{2}$	4 and 14 (T_H)	5 and 15 (T_V)	6 and 16 $\frac{T_H+T_V}{2}$	7 and 17 (T_H)	8 and 18 (T_V)	9 and 19 $\frac{T_H+T_V}{2}$	10 and 20 (T_V-0.6T_H)
(black) 1	> 200	> 230	> 210	> 250	> 270	> 250	> 290	> 300	> 280	> 140
2	196-200	226-230	206-210	246-250	267-270	247-250	287-290	298-300	278-280	136-140
3	191-196	223-226	203-206	243-246	264-267	244-247	284-287	295-298	275-278	133-136
4	187-191	219-223	199-203	239-243	261-264	241-244	281-284	293-295	273-275	129-133
5	183-187	215-219	195-199	235-239	258-261	238-241	278-281	290-293	270-273	125-129
6	178-183	211-215	191-195	231-235	254-258	234-238	274-278	288-290	268-270	121-125
7	174-178	208-211	188-191	228-231	251-254	231-234	271-274	285-288	265-268	118-121
8	169-174	204-208	184-188	224-228	248-251	228-231	268-271	283-285	263-265	114-118
9	165-169	200-204	180-184	220-224	245-248	225-228	265-268	280-283	260-263	110-114
10	161-165	196-200	176-180	216-220	242-245	222-225	262-265	278-280	258-260	106-110
11	156-161	193-196	173-176	213-216	239-242	219-222	259-262	275-278	255-258	103-106
12	152-156	189-193	169-173	209-213	236-239	216-219	256-259	273-275	253-255	99-103
13	148-152	185-189	165-169	205-209	233-236	213-216	253-256	270-273	250-253	95-99
14	143-148	181-185	161-165	201-205	229-233	209-213	249-253	268-270	248-250	91-95
15	139-143	178-181	158-161	198-201	226-229	206-209	246-249	265-268	245-248	88-91
16	134-139	174-175	154-158	194-198	223-226	203-206	243-246	263-265	243-245	84-88
17	130-134	170-174	150-154	190-194	220-223	200-203	240-243	260-263	240-243	80-84
(white) 18	< 130	< 170	< 150	< 190	< 220	< 200	< 240	< 260	< 260	< 80

T_H = Brightness temperature derived from the ESMR horizontal polarization data
T_V = Brightness temperature derived from the ESMR vertical polarization data

Table 5-8

This table follows the new Table 5-5a (above), which replaced
Table 5-5 on page 105 in the User's Guide

Table 5-5b

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 3933 through 5155 (31 March through 30 June 1976)

(Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter				
	1 and 6 (T_H)	2 and 7 (T_H)	3 and 8 (T_H)	4 and 9 (T_V)	5 and 10 $\left(\frac{T_H + T_V}{2}\right)$
(black) 1	>200	>230	>210	>250	>270
2	196-200	296-230	206-210	246-250	267-270
3	191-196	223-226	203-206	243-246	264-267
4	187-191	219-223	199-203	239-243	261-264
5	183-187	215-219	195-199	235-239	258-261
6	178-183	211-215	191-195	231-235	254-258
7	174-178	208-211	188-191	228-231	251-254
8	169-174	204-208	184-188	224-228	248-251
9	165-169	200-204	180-184	220-224	245-248
10	161-165	196-200	176-180	216-220	242-245
11	156-161	193-196	173-176	213-216	239-242
12	152-156	189-193	169-173	209-213	236-239
13	148-152	185-189	165-169	205-209	233-236
14	143-148	181-185	161-165	201-205	229-233
15	139-143	178-181	158-161	198-201	226-229
16	134-139	174-178	154-158	194-198	223-226
17	130-134	170-174	150-154	190-194	220-223
(white) 18	<130	<170	<150	<190	<220

T_H = Brightness temperature derived from the ESMR horizontal polarization data
T_V = Brightness temperature derived from the ESMR vertical polarization data

5.5 ERB Corrections to the User's Guide

Post-launch calibration procedures are described below. While some numbers are for the period of this catalog, the calibration procedure is valid for all data. This information can be added as Section 6.5a to the User's Guide and would fit on page 134.

6.5a Post-launch Calibration

The observations from the wide angle channels (11 and 12), which measure the total energy ($<0.2\ \mu m$ to $>50\ \mu m$) emitted and reflected by the earth, depend on the prelaunch calibration and pertinent instrument temperatures. Assuming unit emissivity for the target scene, the irradiance from the scene is given by,

$$H_T = [\Delta W - \epsilon_s F_s \sigma T_s^4 + \epsilon_d F_d \sigma (T_d + K\,v)^4]$$

where

ΔW = effective thermopile irradiance (w m^{-2})

σ = 5.6697×10^{-8} w m^{-2} (deg. K)$^{-4}$

ϵ_s = emissivity of FOV stop = 0.965

F_s = view factor of the FOV stop = 0.18892

T_s = temperature (°K) of the FOV stop

ϵ_d = emissivity of the thermopile = 0.977

F_d = view factor of the thermopile = 0.80461

T_d = temperature (°K) of the thermopile base

K = factor relating thermopile base temperature to thermopile surface temperature = 0.0031°K per count

v = thermopile output in digital counts

The effective thermopile irradiance (ΔW) is obtained from the thermopile output (v) as follows:

$$\Delta W = a_o\ (T_m) + a_1\ (T_m) \cdot v$$

where

$$a_o = C_o + C_1\ T_m,$$

and

$$a_1 = d_o + d_1\ T_m$$

are derived from prelaunch calibrations and depend on the module temperature (T_m, °C). The coefficients C_o, C_1, d_o, d_1 are given below. In calibrating channel 11 and channel 12 (W) with the FOV stop out, the quantity F_s in the equation for H_T is set to zero.

	Ch. 11	Ch. 12 (W)	Ch. 12 (N)
C_o:	9.86	10.4	8.38
C_1:	0.18358	0.23235	0.18483
d_o:	0.6042	0.6035	0.6014
d_1:	-8.254×10^{-4}	-6.109×10^{-4}	-5.879×10^{-4}

The observations from the other two wide-angle channels (13 and 14), which measure the shortwave radiation (0.2 μm to 4.0 μm), and (0.7 μm to 3.0 μm), are transformed to irradiance (H) by,

$$H = \frac{(V-V_o)}{S_T}$$

where V is the digital counts, V_o is the offset (in counts) observed from dark FOV's, and S_T is the sensitivity (w m^{-2} $count^{-1}$) obtained from the equation: $S_T + S_o(1+(0.01) \cdot (T-25) \cdot STC)$, where S_o is the sensitivity at 25°C, T is the detector temperature (°C), and STC is the sensitivity temperature coefficient (percent per degree C). These constants are given below:

Ch	V_o	S	STC
13	-41	2.004	0.04
14	-44	3.989	0.03

The interpretation of digital counts (V) from the shortwave scanning channels (15-18) gives the radiance (w m^{-2} sr^{-1}) of the scene (N_s) by,

$$N = \frac{(V-V_o)}{S_T}$$

where V_o is the offset (counts) obtained during views of the internal blackbody or space. The sensitivity S_T at temperature T(°C) is obtained using the equation for S_T described above, and the constants given below.

Ch	V_o	S	STC
15	-3	3.155	0.0
16	0	3.275	0.03
17	-1	3.116	-0.01
18	15	2.963	-0.05

A series of checks on the sensitivity of these channels, using the on-board diffuse target, indicated no noticeable degradation over the July-August period of operation.

The longwave scanning channels (19-22) have had numerous inflight calibrations which have remained essentially unchanged since 3 July. The calibration coefficients, a_0 and a_1 relate digital counts (V) to the scene radiance N (w m^{-2} sr^{-1}) as follows:

$$N_s = N_m + a_o + a_1 \cdot V$$

where N_m is the radiance of the detector module. The radiance N_s is the actual radiance measured within the spectral limits of the filter (4.5 μm to 50 μm). The calibration coefficients, obtained from inflight calibrations on 3 July, are as follows:

Ch	a_o	a_1
19	-0.82	0.09583
20	-0.60	0.10535
21	-1.26	0.10168
22	-0.29	0.10338

The deviations of these calibration coefficients as derived from inflight calibrations from 29 July to 20 August are shown in Table 6-6a. The only change which indicates a need for updating the calibration coefficients is the change in the intercept of channel 20.

Periodic checks of the electronic gains of channels 1 through 14 have shown that the electronic gains have remained within 0.5 percent of the prelaunch values, with few exceptions. Table 6-6a shows the percentage of maximum deviation in the gain ratios (current/prelaunch) for the three steps in the calibration staircase voltage. The 6.5 percent change in the high-level gain of channel 2 and the gain changes in channels 6, 7, and 8 are believed to be caused by radio-frequency interference with the electronic calibration circuit and is neither a real change in the electronic gain nor nonlinearities of the channels.

Table 6-7, the ERB Compacted Archival Tape Format, on pages 136 through 139 of the User's Guide, should be changed as follows:

Directory Record (Page 136)

Delete last line of section A which reads:

"135-340	Zero fill	1"

and add the following:

135-149	Orbital Elements	
135	Day of Epoch	1
136	Year of Epoch	1
137	Hours	1
138	Minutes (including fraction)	100
139	Eccentricity	10^5
140	Argument of Perigee (integer part)	1
141	Argument of Perigee (fraction part)	10^3
142	Right Ascension (integer part)	1
143	Right Ascension (fraction part)	10^3
144	Inclination (integer part)	1
145	Inclination (fraction part)	10^3
146	Semimajor Axis (km, integer part)	1
147	Semimajor Axis (km, fraction part)	10^3
148	Mean Anomaly (integer part)	1
149	Mean Anomaly (fraction part)	10^3
150	Sun-Earth Distance (A. U.)	10^4
151-340	Zero fill	1

Orbital Summary Record (Page 139)

Delete last line of table, which reads:

17-340	Zero fill	1"

and add the following:

17-26	Solar Irradiances (Chs. 1-10) Normalized to mean sun-earth distance	Chs. 1-5:10 Chs. 6-10:10
27	Solar Channels Assembly Gamma Angle (positive to right of track)	1
28-340	Zero fill	1

Table 5-9

This table is part of the new Section 6.5a "Post-launch Calibration" to be added to the ERB section of the User's Guide

Table 6-6a

Stability of Calibration of the
ERB Longwave Scanning Channels
(between 29 July and 20 August 1975)

	Channel 19		Channel 20		Channel 21		Channel 22	
Date	Δa_o	Δa_1	Δa_o	Δa_1	Δa_o	Δa_1	Δa_o	Δa_1
7/29	-0.07	-0.4	1.12	0.5	-0.07	-0.4	0.36	-0.3
8/5	0.50	-0.3	1.22	0.1	0.08	-0.3	0.11	-0.2
8/8	0.68	-0.4	1.33	0.1	0.04	-0.2	-0.003	-0.1
8/12	-0.06	-0.2	0.74	-0.4	-0.09	-0.3	0.17	-0.2
8/17	0.69	-0.3	1.49	0.2	0.20	-0.3	0.16	-0.2
8/20	-0.22	-0.3	1.53	0.2	0.04	-0.2	0.13	-0.4

Δa_o = change in intercept (w m^{-2} sr^{-1})

$$= (a_o)_{current} - (a_o)_{7/3/75}$$

Δa_1 = change in slope (% w m^{-2} sr^{-1} ct^{-1})

$$= \frac{[(a_1)_{current} - (a_1)_{7/3/75}]}{(a_1)_{7/3/75}} \times 100$$

Table 5-10

This table is part of the new Section 6.5a "Post-launch Calibration" to be added to the ERB section of the User's Guide

Table 6-6b

Percentage Change of the Maximum Deviation in the Gain Ratio between Post-launch and Prelaunch Gain Values for ERB channels 1 through 14 (20 June and 17 August 1975)

Ch	G_{0-39}	G_{30-60}	G_{60-90}
1	-0.2	0.2	-0.1
2	0.1	-0.3	-6.5
3	±0.1	-0.1	-0.2
4	±0.1	-0.2	-0.1
5	±0.1	-0.2	0.2
6	2.6	1.8	-2.1
7	1.3	2.1	-0.6
8	1.6	1.3	-0.9
9	0.4	-0.6	±0.1
10	0.7	-0.5	±0.2
11	-0.4	0.3	0.4
12	0.2	-0.2	0.4
13	-0.3	0.2	0.3
14	+0.2	-0.1	0.3

5.6 LRIR Corrections to the User's Guide

Table 5-11

Post-launch analysis of relative spectral response data and orbital data leads to the following corrected values for Table 7-2, on page 154 of the User's Guide

Table 7-2

Optical Characteristics of LRIR Channels

Channel		Band Pass (50% Peak Response)	Field-of-view (km)		Random noise in orbit* ±1σ(watts/m²-sr)
No.	Abbrev.		Vertical	Horizontal	
1	NCO_2	649-672 cm^{-1} (14.9-15.4 μm)	2.0	20	0.0023
2	BCO_2	592-700 cm^{-1} (14.3-16.9 μm)	2.0	20	0.0040
3	O_3	984-1169 cm^{-1} (8.6-10.2 μm)	2.0	20	0.011
4	H_2O	412-446 cm^{-1} (22.4-24.3 μm)	2.5	25	0.008

*Noise will gradually increase as the detector temperature increases during the useful life of the experiment.

5.7 PMR Corrections to the User's Guide

There are no PMR corrections to the User's Guide.

5.8 TWERLE Corrections to the User's Guide

Table 5-12

The following are address changes to Table 9-2
on page 186 in the User's Guide

Table 9-2

Nimbus RAMS Experiments - Address Changes

Address Changes

OLD	NEW
Mr. G. R. Cresswell Division of Fisheries & Oceanography Commonwealth Scientific & Industrial Research Organization Melbourne, Australia	Mr. G. R. Cresswell Division of Fisheries & Oceanography CSIRO P. O. Box 21 Cronulla, N. S. W. 2230 Australia
A. J. Dyer CSIRO P. O. Box 77 Mordialloc, Vic 3195 Australia	Dr. A. J. Dyer Division of Atmospheric Physics CSIRO Station Street ASPENDALE 3195 Victoria, Australia
Professor Pierre Lacombe, Director Laboratory d'Oceanographic Museau Historie Naturelle de Paris 43 Rue Cuvier Paris, France	Professor Pierre Lacombe, Director Laboratoire d'Oceanographie Physique Museum National d'Histoire Naturelle 43-45 Rue Cuvier 75005 Paris, France
Professor P. Tchernia Museum d'Historie Naturelle de Paris 43 Rue Cuvier Paris, France	Professor P. Tchernia Laboratoire d'Oceanographie Physique Museum National d'Histoire Naturelle 43-45 Rue Cuvier 75005 Paris, France

Table 9-2 (Continued)

Dr. Norbert Untersteiner, Program Director Project AIDJEX 4059 Roosevelt Wave, N. E. Seattle, WA 98105	Dr. Norbert Untersteiner AIDJEX Coordinator University of Washington 4059 Roosevelt Way, N. E. Seattle, Washington 98105
Dr. Donald V. Hansen, Director Physical Oceanography AOWL NOAA U. S. Department of Commerce Miami, Florida	Dr. Donald V. Hansen, Director Physical Oceanography Laboratory AOML/NOAA 15 Rickenbacker Causeway Virginia Key Miami, Florida 33149
Vincent E. Lally National Center for Atmospheric Research P. O. Box 1470 Boulder, Colordao 80302	Mr. Vincent E. Lally National Center for Atmospheric Research P. O. Box 3000 Boulder, Colorado 80302
J. Lentfer Wildlife Research U. S. Department of Interior 813 D. Street Anchorage, Alaska	Mr. Jack W. Lentfer Fish and Wildlife Service Department of Interior 4454 Business Park Blvd. Anchorage, Alaska 99503
H. Brann Bureau of Meteorology Melbourne, Victoria Australia	Mr. H. N. Brann Bureau of Meteorology P. O. Box 1289K Melbourne, Victoria 3001 Australia
Robert Kee Development Engineering Division Code 6201 U. S. Naval Oceanographic Office Washington, D. C. 20390	Mr. Robert Kee Code 6220 U. S. Naval Oceanographic Office Washington, D. C. 20373

Table 9-2 (Concluded)

F. Anderson South African Council for Scientific & Industrial Research Congella, Natal, South Africa	Mr. Frank P. Anderson CSIR, Institute for Technology P. O. Box 17001 Congella 4013 South Africa
H. Stommel Professor of Oceanography MIT Cambridge, Massachusetts	Professor Henry Stommel Department of Meteorology Room 54-1416 Massachusetts Institute of Technology Cambridge, Massachusetts 02139
B. Buck Polar Research Lab. Santa Barbara California 93101	Mr. B. M. Buck, President Polar Research Laboratory, Inc. 123 Santa Barbara Street Santa Barbara, California 93101
John A. Knauss Graduate School of Oceanography University of Rhode Island Kingston, Rhode Island 02881	Dr. P. L. Richardson Woods Hole Ocean Institute Woods Hole, Massachusetts 02543

9 T&DRE Corrections to the User's Guide

There are no T&DRE corrections to the User's Guide.

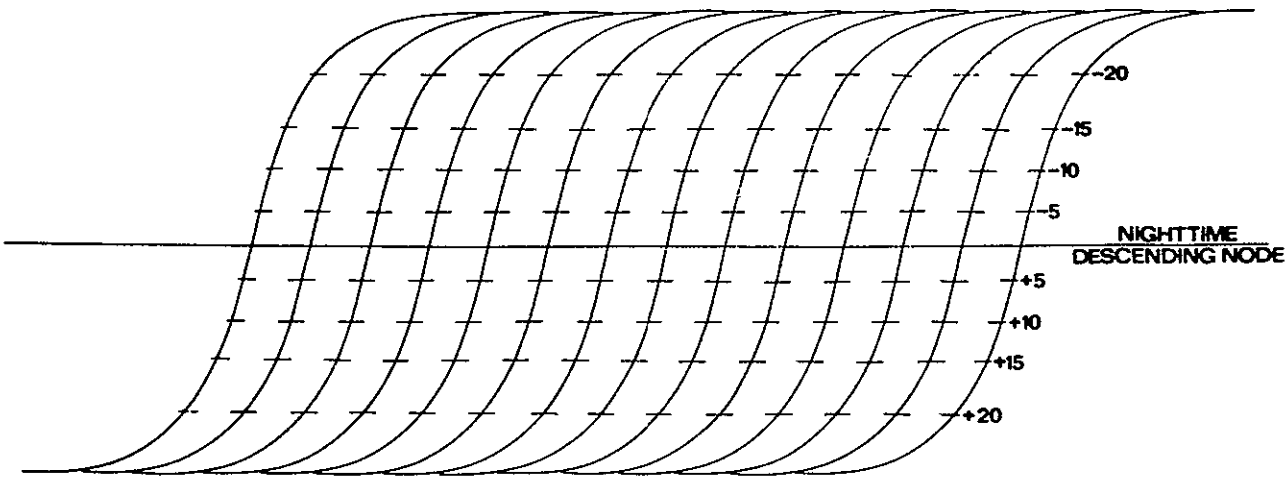
Table 5-13

The following are new TWERLE users, added since launch.
This information should be added to Table 9-2
(Nimbus RAMS Experiments) on page 186 in the User's Guide.

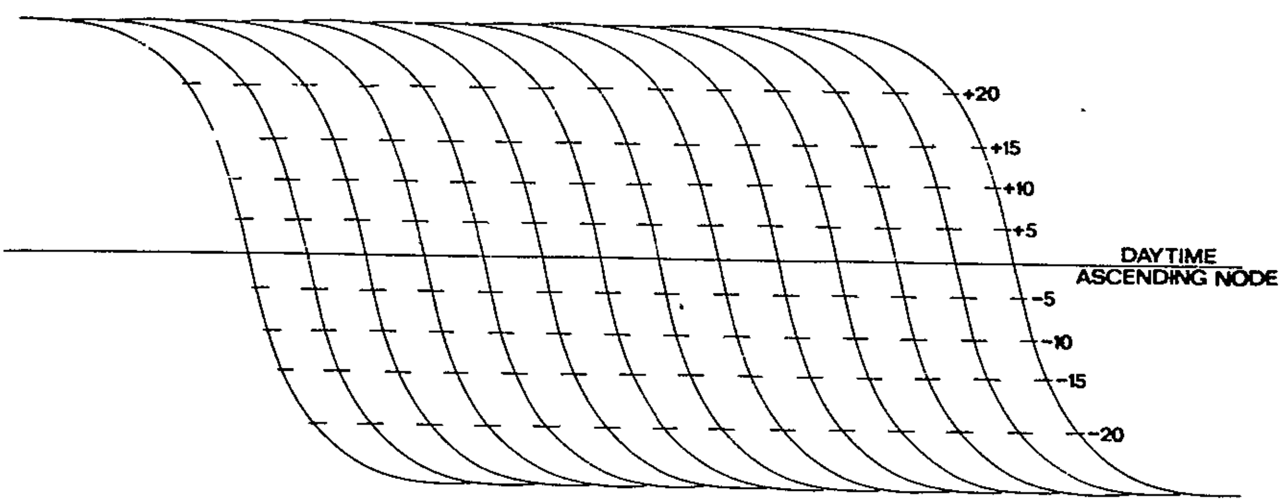
Principal Investigator	Experiment Title	Platform		
		Number	Type	Deployment Area
Dr A D. Kirwan, Jr. Department of Oceanography College of Geosciences Texas A & M University College Station, Texas 77843	Anomaly Dynamics Study (ADS)	32	Drifting Buoys	North Pacific
Mr David F Thomas, Jr SATD-MEB-SDS, Mail Stop 322 NASA Langley Research Center Hampton, Virginia 23665	Air-droppable In Situ Platforms for Long Duration Measurements near Hurricanes	10	Ocean Platforms	Western Atlantic near North America
Dr P. Roger Williamson Department of Applied Physics & Information Science University of California – San Diego La Jolla, California 92037	Stratospheric Monitoring with Longterm Balloon Flights	3	Super- pressure Balloons	Southern Hemisphere
Mr J C. O'Rourke Canadian Marine Drilling Ltd P O. Box 200 Calgary, Canada T2P 2H8	Arctic Ice Dynamics	2-4	Sea Ice Platforms	Beaufort Sea
Dr J Michael Hall NOAA Data Buoy Office National Space Tech Office Bay St Louis, Mississippi 39520	East Coast Drifting Experiment	24	Drifting Buoys	Atlantic Ocean
	High Impact Detection and Determination on Large Buoys	10	Buoy	Atlantic Ocean, Gulf of Mexico, & North Pacific Ocean
	Reliability Enhancement Experiment	3	Buoy	Santa Barbara, California & Arctic Ocean
Mr Robert Oehlkers University of Wisconsin Space Science and Engineering Center 1225 W Dayton St Madison, Wisconsin 53706	Buoy Experiments in Lake Michigan	10	Buoy	Lake Michigan

Table 5-13 (Continued)

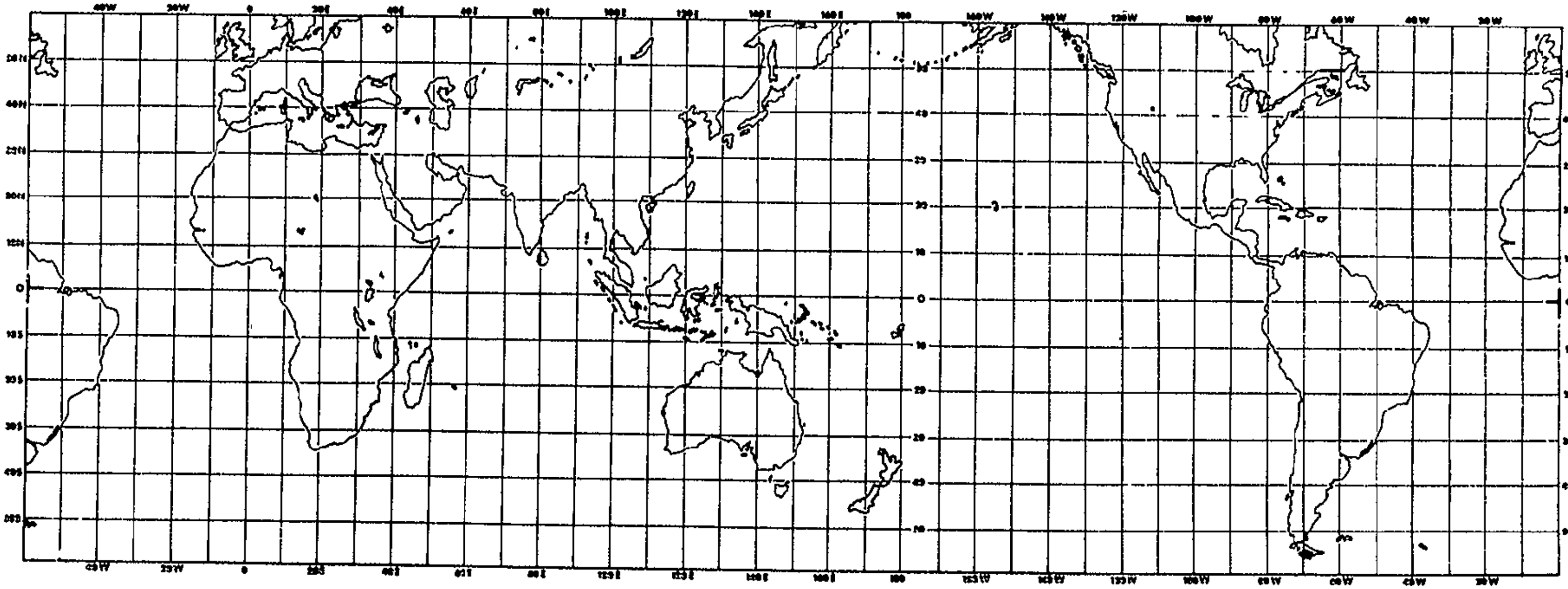
Capt. E. A. Delaney USCG Oceanographic Unit Bldg. 159E Navy Yard Navy Yard Annex Washington, D.C 20590	North Atlantic and Labrador Current Studies	1	Drifting Buoys	North Atlantic, Labrador Coast
Dr. R. H. Goodman Innovative Ventures, Ltd. 4632 11th St Calgary Alberta, Canada T2E2W7	Ice Monitoring in the Canadian Arctic and Labrador Region	2	Drifting Buoys	Canadian Arctic, Labrador
Dr D Halpern NOAA Pacific Marine Env Labs. Univ. Washington WB10 Seattle, Washington 98195	Ocean Circulation Studies and Pacific Equatorial Waters	3	Drifting Buoys, Moored Buoys	Mid-Pacific Equatorial



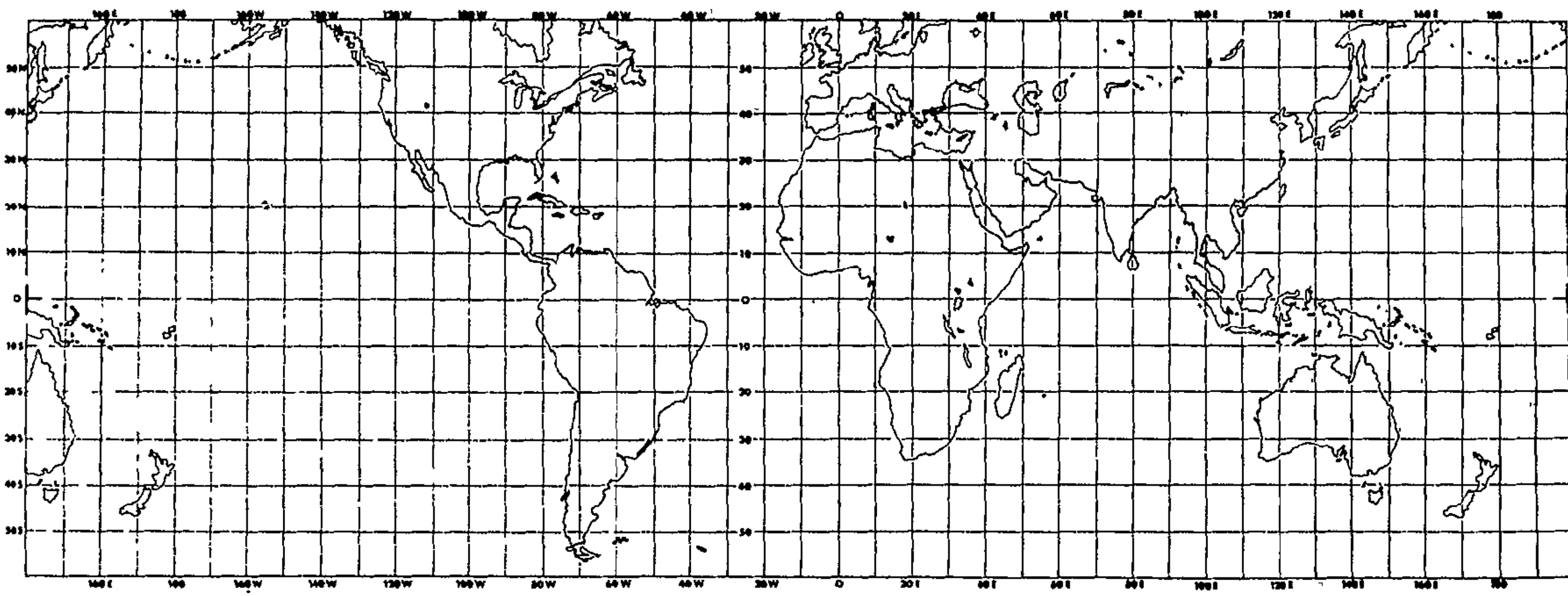
NIMBUS SUBSATELLITE TRACKS OVERLAY



NIMBUS SUBSATELLITE TRACKS OVERLAY



Location Guide
Average Scale for Nimbus
THIR Nighttime Montages



Location Guide
Average Scale for Nimbus
THIR Daytime Montages